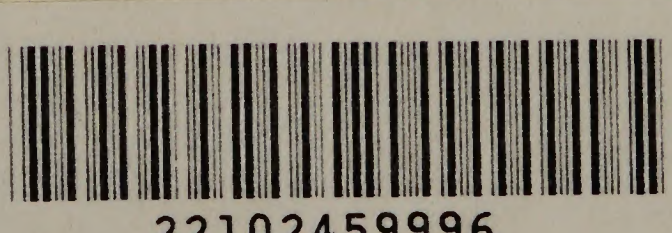
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THE

VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

EDITED BY

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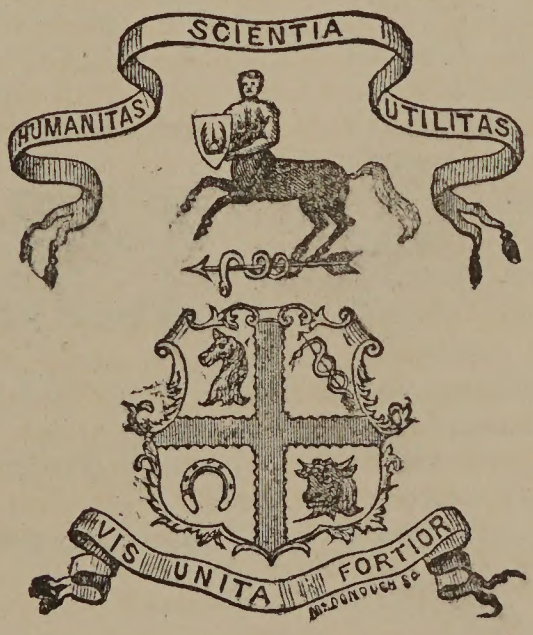

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JULY, 1881.

ON A HORSE DISEASE IN INDIA KNOWN AS "SURRA," PROBABLY DUE TO A HÆMATOZOON.

BY G. EVANS, M.D., M.R.C.V.S., ARMY VETERINARY INSPECTOR, INDIA.

[The following report, for a copy of which we are indebted to Mr. Collins, Principal Veterinary Surgeon to the Army, possesses much interest when read in connection with, or in continuation of, the descriptions already published of the *Filaria Sanguinis*, as producing disease in man and animals.]

THE name *Surra* is used by the natives to denote anything rotten and is applied by them to a dry rot, such as a withered leaf, and to a moist rot, such as a putrid carcase. The name is thus a very comprehensive one, and is applied loosely to all chronic ailments of a lowering character which have not a specific designation. A native will speak of himself as "*sur gia*" (gone rotten) when he has felt for some time in ill-health, and does not know what he suffers from. The name "Surra" is given to this disease among horses as a distinctive designation, because a withering or falling off in condition is a marked feature in its progress, without any visible lesion, *post-mortem*, to account for it. In England we speak of the "Rot" in sheep, and "Decay," "Consumption," etc., in man, to denote affections characterised by wasting during life.

The disease is different in some important respects from any other that has ever been reported upon in man or beast. It is quite new to science; and, until the parasite which is found in the blood of animals suffering from it is better known and studied, I think it would be wise to retain the name "Surra" to designate

the disease. But though new to science, it is not new in reality; for it has been only too well known to the natives of Dera Ismail Khan district for several generations, as an occasional scourge.

Geographical Distribution.—So far as I have been able to learn, the disease is not known east of the Indus; but it has an extensive range, I believe, on the west of that river. Major Underwood, 4th Punjab Cavalry, told me he was informed that the 3rd Punjab Cavalry lost 350 horses from Surra, at Arsene, near Rajanpur, a few years ago. Surgeon Haig, of the Indian Medical Department, who took a great interest in my investigations at Dera Ismail Khan, informed me that he noticed a disease among the horses in Persia in the autumn of 1876, which had all the outward symptoms of Surra, and he was told it was always fatal. The Persian horses fed there upon chopped straw, and had very impure water to drink from irrigation channels, etc., such as the horses of the district of Dera Ismail Khan have.

Definition.—A specific parasitical, inflammatory, enzoötic blood disease, characterised by Fever, with Jaundice, petechiæ of mucous membranes, especially of the eye and vagina; Dropsy; albumen sometimes in the urine; great prostration of strength; rapid wasting; and with a specific parasite in the blood during life, but no characteristic structural organic lesions found after death. It may be transmitted by the subcutaneous injection of blood, and drinking fresh blood containing the parasites alive; but it is not contagious or infectious in the ordinary way. The average duration of the disease is probably not less than two months, but reliable statistics are wanting upon that point.

Symptoms.—The symptoms of Surra may be divided into those common to other maladies, and those which are more characteristic of itself. The invasion of this disease, when acquired in the ordinary way, is that common to all low fevers. Thirst is more or less abnormal, appetite capricious, coat staring, action sluggish, occasionally stumbling on the front limbs, or dragging the hind legs on the ground. The sowar notices his horse to be out of sorts; but as the animal is not very ill, he does not report him sick. He gives him some spices and butter, and continues to ride him, until at last the animal can no longer carry his rider safely. He then takes him to the sick lines for the examination

of the salootri, who finds the fever more or less high at this stage, depending upon the amount of work the animal has been doing the previous few days. The pulse is elevated, mouth hot; sometimes the breath smells badly; slight catarrhal symptoms, the eyes weeping, and often there is a discharge from the nose of mucus more or less tinged yellow. In a small proportion of cases the submaxillary glands may be enlarged and tender. In a large proportion of cases the legs are swollen; the salootri presses the swelling with his fingers, and finds it pits; sooner or later a similar swelling is found between the fore legs of mares, or at the sheath of horses, and the animal is dropsical. He refuses food, there is great thirst, and the urine is high-coloured. The swelling of the legs, etc., with the feverish symptoms, arouse the suspicion of the salootri, who then everts the eyelids; and if he finds the conjunctival membrane of a decidedly yellow colour, often a dirty yellow, with claret-coloured spots on the eyelids, or, as is most common, on the *membrana nictitans*, at the inner corner of the eye, which the salootri projects by the pressure of his finger for examination, then he has no hesitation in declaring that the animal suffers from "Surra." In the case of a mare, he opens the labia of the vulva, and if he finds the mucous membrane of the vagina decidedly yellow, with the petechiæ even more marked than in the eye, his diagnosis is confirmed. If the sowar be now questioned as to how long the horse has been ailing, he can hardly ever tell; his answer will be vague and indefinite; so that it is not possible to fix the duration of the disease exactly in any of these cases, and the reckoning is afterwards made from the date of admission on the sick report. The duration of the disease before that has depended, as a rule, upon the amount of work the horse has had, and upon the previous condition and constitution of the animal—weak animals succumb soonest. In a few days after admission on the sick list, owing to rest, the activity of the fever subsides; pulse lowers; temperature becomes normal, so far as the hand can recognise; the appetite returns, though it remains more or less capricious. With regard to grain, the grass is usually all taken, but thirst continues excessive. The colour of the urine, as a rule, becomes normal, and the dung also. I did not find the dung in any case

abnormal; but I was told by the salootri, who laid great emphasis upon it, that the dung balls are sometimes coated with mucus, having reddish patches. He showed me one of these: it was what we often find in health. I mention this here, for the benefit of the frontier officers who may read this report, that they may not be misled. The progress of the disease is variable. It is often marked by an increase of the dropsical swellings, which, however, sometimes subside, and again return worse than before. I have seen some cases in the last stage without any swelling, though it had been present. The yellowness of the mucous membranes, or Jaundice, and the petechiæ, remain throughout, though they are variable in intensity. In a few cases the swelling of the submaxillary glands which I mentioned, will develop into an abscess, with a thick gluey mucus discharge from the nose. I discovered no other glands in the body enlarged before or after death, and I found no sign of ulceration of the nose or tubercle in the lungs, etc. In some advanced cases the urine is passed frequently, and appears to be much more than normal in quantity; but I was not able to measure it. The most constant and invariable symptom in the progress of the disease, is the wasting away of the flesh; and this is the more remarkable, seeing how much the patient eats, and apparently with good appetite. The wasting or withering away goes on more rapidly in some cases than in others. The records of the 4th Punjab Cavalry show an average duration of forty-three days after the *admission* on the sick list. Whether they die early or late, they survive until they are reduced in condition to mere living skeletons, clothed with little but skin—most pitiable objects to look at. There is often much anæmic palpitation of the heart in the last stage; the sound can be heard a little distance off, and the membranes become blanched. Some cases at last drop down and die suddenly, perhaps when they are eating and enjoying food; others become delirious, and struggle on the ground as if in pain; while other cases linger for days after they are down, too weak to rise, or to stand after they are helped up, but go on eating all the grass they get and much of the corn, until at last they die without pain, passing away gradually.

Such are the symptoms which any intelligent observer would

notice. For my own more especial observations with regard to the Pulse, Respirations, Temperature, Urine, and Blood, I beg to refer to the Appendices lettered A to I. The first three are records of fairly typical cases of the disease, contracted in the normal way; the other cases I produced, by injecting beneath the skin of healthy animals fresh blood from the jugular vein of a horse suffering from Surra, or else by pouring such blood into the stomach of healthy animals. I made all these observations myself, and noted everything in my memorandum-book at the moment of observation; so I can vouch for their correctness, so far as they go; but I regret exceedingly the incompleteness of these records upon some points of special interest to medical men. The vastness of the field I had to work in, and the richness of valuable facts to be gathered, were more than I could possibly do justice to alone, without trained scientific assistants. I wish I could have carried on my examinations of the urine of the cases inoculated, as I did with the normal cases, to see whether it contained albumen, and whether there was in more than one case any apparent relation between the advent of albumen in the urine and the decrease of the parasites in the blood. I spent so much time every day in studying the parasites in the blood, fearing I could not bring any away to show, that I could not devote myself as much as I wished to the microscopical examination of the sediment from the urine: my eyes would not stand it. I many times looked for "casts" in the sediment of the urine, and failed to find any; but I am not prepared to say none were ever passed, though I believe, if they are passed, it is rarely, for the kidneys all appeared quite healthy, *post-mortem*, excepting in one case, which I could not examine by the microscope. It was my last day at Dera Ismail Khan, and I had too much to do. I had to work with the microscope for many hours a day out of doors at the sick lines, or else in a stable, when the thermometer was 82° within a bungalow, and the sun pouring down its rays through a cloudless sky upon the surrounding bare, sandy ground. Very few investigators know what that means. Moreover, the flies were an additional torment; for when they crowded upon the stage of my microscope, disturbing the vision, soiling the lenses, and swarming on my face, etc., it was not possible to fan them

off without beating and shaking the microscope. The blood which I was examining, or the tissues of the body at *post-mortem* examination, attracted them so ; and thus much of my energy was expended in self-control under that provocation.

Post-mortem Appearances.—The *post-mortem* examination I made of those which died from exhaustion revealed no structural disease, and differed from those which were destroyed only in *post-mortem* changes. Owing to the intense heat, I could not make a proper *post-mortem* examination unless I commenced at dawn of day ; and, as the horses did not die at a convenient hour for me, *post-mortem* changes would set in before I could examine them. Those destroyed were bled at dawn of day, as the tissues without blood keep better ; and as soon as the animal died he was opened, the internal organs removed, folded in cloths, and placed in felted baskets containing ice, where they remained until I was able to examine them carefully, making thin sections for the microscope, etc. In the meantime I first examined the stomach and intestines, opening them from end to end to see the mucous lining and intestinal glands, etc. I mention this because in no other way could a satisfactory investigation, *post-mortem*, be made under such conditions of climate, and also to add weight to the results of my examinations ; for I took every precaution in my power to prevent making mistakes. This was the more necessary because of the disease being a new one to me.

There was a more or less abnormal amount of clear serum effused in the peritoneal cavity in all cases, with a slight layer of lymph upon the parietal layer, but no sign of any inflammatory action : it was a simple exudation. I found no abnormal effusion in the pleuritic cavity, but in one case the pericardial sac was greatly distended with fluid. In several cases I found *Filaria papilosa* free upon the mesentery, besides other nematodes, as well as a very small tape-worm, whose character I have not yet been able to determine. I examined the kidneys, liver, spleen, heart, lungs, and the mucous lining of the stomach and intestines throughout, with great care in every case when I had the opportunity, and I am prepared to state positively that this disease is not characterised by any structural organic change : it is purely a disease of the blood. In one case, as I have mentioned else-

where (Appendix C, case 3), the kidneys were pale and sodden-like, but I was not able to examine them by the microscope; and in another the margin of one lobe of the lung was hepatised; but these cases, being so exceptional, can have had no characteristic relation to the disease. In some cases there were petechiæ of the mucous lining of the intestines, similar to what was visible during life in the vagina and on the eyelids. The mucous membranes everywhere were more or less tinged yellow, and often the subperitoneal connective tissue was yellow also; but in no case was the structure of the liver diseased, though in one instance the liver was studded throughout with calcareous degenerations of cestode larvæ, and in two cases I found flukes in the liver, with inspissated bile distending some of the bile ducts enormously.

Mortality.—The records of the 4th Punjab Cavalry show that no case entered on the sick list for this disease has ever recovered. I was told that a few cases have made slow progress in the disease, alternately better and worse for over a year; but they never recovered. This was confirmed by what the natives of the district informed me at the outposts. The per-centages of fatal cases among the horses of the 4th Punjab Cavalry at the outposts, with reference to the numbers of horses there during the two past years, and this year up to the end of September, are as follows:—1878, 33.3 per cent.; 1879, 46.8 per cent.; 1880, 56.4 per cent. The total numbers of horses of the 4th Punjab Cavalry which died during the several years are as follows. The return shows at what posts the horses were placed on the sick list. I have not been able to get the per-centage of those stationed at each post.

Years.	Dera Ismail Khan.	Drabund.	Manghi.	Jutta.*	Girmi.	Kirghi.	Zam.	Tonk.	Total.	Remarks.
1878	7	3	14	—	7	—	9	—	40	Year remarkably wet.
1879	1	33	12	22	4	—	1	44	118	Year very dry.
1880†	2	—	36	47	—	—	—	30	114	Year very dry.
Total	10	36	62	69	11	—	10	74	272	

* Jutta not occupied in 1878.
† Up to the end of September.

Forty-nine horses, more or less affected with Surra, brought in from the different outposts, marched out from Dera Ismail Khan with the 4th Punjab Cavalry on removal to Edwardesabad on the 6th October ; one other was shot the same day for being too weak to rise, and six remained behind for my observations. On the 3rd inst. the officer commanding reported to me that, out of those fifty-five, forty had since died, and fifteen remained hopeless. Since that date fifty-six fresh cases had been admitted, out of which fourteen had died, leaving a total of fifty-seven (15 and 42) troopers on the sick list, besides sixteen grass-cutters' ponies Fresh cases were being discovered daily.

Contagion and Infection.—Though I have succeeded in transmitting the disease by the hypodermic injection of the affected blood, and also by pouring the blood into the stomach (*vide* Appendices D, E, F, G, and I), I find no evidence to show that the disease is either contagious or infectious in the ordinary sense. The weight of evidence is to the contrary, as I have mentioned in Appendix K (par. 22), seventy-seven horses of the 3rd Punjab Cavalry becoming affected with Surra at Jutta, from which they all died at Edwardesabad, and did not communicate the disease to others. It is not improbable, however, that those flies so excessively troublesome at Jutta and other outposts, which bite horses so that the blood streams down the legs as if it had been squirted on, do convey the disease from one horse to another by inoculation. It is a fact that the disease does spread mostly at those posts where the horses are closely packed and the flies are in greatest numbers; but those are the posts also where the drinking-water is worst; so that it is exceedingly difficult to form a true opinion upon this subject without further experiments. However, the indications at present are that horses affected with Surra should be kept at a distance from other horses during the season when those flies are common. They were becoming scarce in the early part of October. I obtained two specimens with difficulty. I do not know yet what is their scientific name ; they are very large, of a brown colour, and common in many parts of India ; the natives call them *Bhura Dhung*, which means a great needle-like sting. There is a common opinion prevailing among the natives of the Dera

Ismail Khan district, that this fly is the cause of the disease. I shall refer to this again, and merely mention it here because I think the fly may sometimes propagate the disease by inoculation, and thus be an item among the causes to account for the spread of the disease more at some posts and in some years than others, though the disease would exist independently of them. When the horses stand close together the fly is able to go from one horse to another before the blood about its mouth is dry; whereas if he had to travel some distance through the dry air, in the hot sun, the virus of the blood would perhaps be destroyed.

Different Animals affected.—The disease is not confined to horses: I found two mules affected with it, and having the same outward symptoms of Surra as the horses, with the specific parasite in the blood. They came in to head-quarters from Tonk outpost. The men in charge had not reported them sick, and said they did not know they were ill. I noticed they were in a much lower condition than another mule which came in at the same time from the same outpost. On examining the mucous membranes, I found them very yellow, with petechiæ, as in Surra horses. There was no dropsical swelling in either case. The temperature in the rectum of the thinner of the two was 103°, pulse 46. On inquiry, I found he had been off his feed to some extent, irregularly, for a month. The temperature of the other mule was 104°, pulse 48. He had refused one-third of his grain the previous two days. On examining the blood, I found the Surra parasite in countless numbers in each drop from both mules. This illustrates how insidious the disease is in its early stage, and how difficult it is to find, from the men in charge, when the disease commenced. If those mules had not been brought into Dera Ismail Khan, they would have been made to work as usual without suspicion of any serious disease, though they were becoming thin.

I was informed that camels are subject to Surra, and that there were several belonging to the 4th Sikhs suspected to be suffering from it. Upon my application to Major Gowan, commanding the regiment, he was good enough, on the 6th of October, to send five of them for my inspection, and allowed me to kill two for *post-mortem* examination.

Camel No.	$\frac{22}{79}$,	aged	8,	on the	sick list	21	days.
„	$\frac{41}{79}$,	„	7,	„	„	19	„
„	$\frac{42}{79}$,	„	8,	„	„	26	„
„	$\frac{61}{80}$,	„	6,	„	„	22	„
„	$\frac{8}{79}$,	„	11,	„	„	over a year.	

The jemadar of the camels told me he thought that No. $\frac{8}{79}$ suffered from a disease different from the others, because he had been so long ill, and had never refused food; whereas the others fed irregularly, and lost condition much more rapidly. The five were wretchedly thin. No. $\frac{8}{79}$ was rather thinner than the others. On examining the mucous membranes, I found the first four on the list presented the characteristic appearance of Surra in horses—yellow with petechiæ, but No. $\frac{8}{79}$ had petechiæ without the yellowness. He was more blanched, and his eyes were dry, while the others were lachrymose. Neither of them had dropsical swellings, and I was told they had not had any previously. On examining the blood by the microscope, I found the parasite of Surra in countless numbers, and very active in the first four, but not one in No. $\frac{8}{79}$. I examined many drops of his blood, and failed to find one. He had in his blood what I did not find in the others—the embryos of a filaria which appeared to me to answer exactly to the description given by Dr. Lewis, in his monograph of the *Filaria Sanguinis Hominis:* about ten or twelve were present in every small drop of blood. I did not find these in the horse, except in one case suffering from Surra, with the Surra parasite, when I met with one single specimen of the filaria. I have submitted these to Dr. Lewis, but he has not yet had time to determine whether they are exactly the same as those found in man. He is inclined to think that they are a little different. The urine of each of these camels was quite normal in appearance.

(To be continued.)

CEREBRO-SPINAL MENINGITIS.

BY GEO. REES, M.R.C.V.S., ASH-NEXT-SANDWICH.

THE cases recorded by Mr. Daniel in last month's VETERINARY JOURNAL, of the above disease, have induced me to send an account of four cases which have occurred in this practice. Each of them occurred in places widely separated, and were from stables where a number of other horses are kept, but we have not yet had any of the others attacked. The hounds to which the carcases were sent did not suffer from any disease after partaking of the flesh. From two of the cases parts of the spine were brought home, in order to make a careful examination of them ; and from them two dogs ate of the raw flesh ; but it did not have that toxic effect which the dogs and fowls suffered from at Chelmsford, after having consumed that from the horses which died there.

CASE I.

On the 23rd December, 1880, I was requested to attend upon a cart-horse at Word. On asking the history of the case, I was told he had been at work during the day, and when coming home seemed quite fresh. He fed well after returning, but about an hour afterwards was noticed to be uneasy with his hind extremities, and thinking he was suffering from Colic, he was taken out and led about. He had not been out many minutes before his hind legs became quite useless, and down he went. He made frequent attempts to rise, and would get his fore legs forward, and sit on his quarters for some little time. When I arrived I found the horse in great pain, and at times struggling very much. The pulse was 90 and full ; temperature 102°; respiration 49 ; mucous membranes slightly injected ; fore extremities warm, hind extremities rather cold, with warm perspiration over parts of the body. Examination *per rectum* revealed the bladder slightly distended, while the fæces, which I removed, were of normal consistency. I gave him Sol. Aloes ʒviij., Sp. Æth. Nit. ʒij., in warm ale ; to be followed in three hours by a mixture of Ol. Lin. ʒxij., Æth. Chlor. ʒij., Liq. Ammon. Acet. ʒiv. I gave him also a warm enema, and ordered warm fomentations to the loins, which

were to be afterwards well rubbed with Lin. Ammon. Co. Had him well covered, and his legs rubbed and bandaged.

24th.—Pulse 95 ; temperature 103$\frac{1}{5}$° ; respiration 56 ; extremities and surface of body warm. Had passed both urine and fæces. The hind extremities were quite powerless when he tried to get up, but he was able to extend them in a backward direction very freely. Gave mixture of Chlor. Hydrate ʒiv., Tinct. Aconite (Fleming's) ♏xv., Liq. Ammon. Acet. ℥iv., in warm ale Oj. ; to be repeated in four hours. Local treatment as on previous evening. Evening.—Symptoms about the same as morning, but the fæces had been passed more freely. Struggled very much at intervals, especially if any one approached him. Treatment same as in the morning.

25th.—Pulse 88 ; temperature 102$\frac{2}{5}$° ; respiration 47 ; mucous membranes injected. Had fed during the night, and looked a little better. Pressure along the spine caused pain, and when pricked with a pin in the hind quarters sensation appeared to be only partial. Repeated medicine and warm fomentations to the loins. Evening.—Symptoms about the same. Treatment as before.

26th.—Pulse 80 ; temperature 102$\frac{1}{5}$° ; respiration 46 ; mucous membranes injected. Urine and fæces passed during the night. Mixture as before, every four hours, and hot fomentations to loins.

27th.—Pulse 84, and weaker ; temperature 102$\frac{2}{5}$° ; respiration 46. Had been easier during the night and fed a little. Gave a mixture of Sp. Æth. Nit. ℥ij., Chlor. Hyd. ʒiij., Liq. Ammon. Acet. ℥iv. The owner was very anxious to get him into slings ; but, being such a very big horse, he was advised not to do so. However during the day he made a temporary sling ; but they had only just got him up when he struggled fearfully, and died in about ten minutes.

On making a necropsy, the psoas muscles were found to be lacerated in a transverse direction ; great extravasation of blood in the lumbar region, especially above the kidneys ; the spinal cord was very much congested as far forward as the tenth or eleventh dorsal, while anterior to this it seemed quite normal in appearance. All other internal parts were apparently in a healthy condition.

Case II.

The thoroughbred horse Clearwell, the property of Dr. Brockwell, was turned off for a month's rest, and on December 30th, between three and four o'clock, had a ball given him. About nine o'clock the same evening a message came, to the effect that the horse was very ill, and unable to get up. On making inquiries, it was found that he had been done up for the night, between seven and eight o'clock, when to all appearances he was quite well, and fed as usual. About half-past eight the man heard him striking the box, and on going to see him found him sitting on his hind quarters, and endeavouring to get up. He was assisted, and they succeeded in getting him up, but he soon went down again. The symptoms were, pulse 76, and full; temperature 102$\frac{4}{5}$°; respiration 35; mucous membranes injected. Examination *per rectum* found the latter distended with fæces, which were rather hard, while the bladder was found to contain a little urine. Gave him mixture of Chloral Hydrate ʒiiij., Liq. Ammon. Acet. ʒiv., Ol. Lin. ʒxvj.; to be followed in four hours by Æth. Chlor. ʒij., Liq. Ammon. Acet. ʒiv., in pint of warm ale. Warm fomentations to loins, to be followed by application of Cataplasma Sinapis.

31st.—Pulse 88; respiration 45; temperature 103°; mucous membranes highly injected. Passed some fæces and urine during the night. Had been very restless throughout the night. Gave him a mixture of Chlor. Æth. ʒij., Chlor. Hyd. ʒij., Liq. Ammon. Acet. ʒiij.; to be repeated every three hours. Warm fomentations to loins. Evening.—Found he had been easier during the day; but the symptoms were now more severe, and a fatal termination was prognosticated. He died about half-past eight that night, having struggled fearfully during the last few minutes. He was quite conscious to the last. I was unable to make a *post-mortem* of this horse, the carcase having been removed before I arrived next morning.

Case III.

Was a horse, the property of Messrs. Gillon and Co., Sandwich. A dray with a pair of horses was sent out on the 18th January. After proceeding about four miles, the off-side horse was observed by the man to be dragging his hind legs very much in going down

a hill. After going a little farther, the horse fell, but in a little time got up again, but still seemed weak behind. He was then taken out, when, after getting about a quarter of a mile farther, the hind legs gave way again, and this time he was unable to get up.

The weather being so very rough that day, they were not able to get him under shelter until late at night, when he was placed on a hurdle and dragged some little distance to a coach-house. A message came here in the evening, but the snow had drifted to such an extent that it was an impossibility to leave this place that night. Sent back by the man a mixture of Chloral Hydrate ʒp., Sp. Æth. Nit. ʒij., Ol. Lin. ʒxvj.; to be followed by Chloral Hydrate ʒiij., Sp. Æth. Nit. ʒij., Sp. Ammon. Arom. ʒj., in a pint of warm old ale.

On the 19th I went to see him, and found his hind extremities quite rigid and cold, while the fore legs were moderately warm; ears and surface of body cold. Pulse was 96; temperature $104\frac{2}{5}^{\circ}$; respiration 70; mucous membranes very highly injected. Removed fæces, which were hard, while the urine which was taken away was almost of a chocolate colour. Had him well rubbed and covered. Fomentations to loins, and embrocation to be afterwards applied. Evening.—The symptoms about the same, but the respirations increased. Gave Æth. Chlor. ʒij., Spts. Ammon. Arom, ʒj., Tinct. Aconite ♏xx., in warm ale.

20th.—The symptoms were greatly aggravated, and recovery considered hopeless, so he was ordered to be destroyed.

A necropsy showed extravasation of blood immediately beneath the lumbar vertebræ, while the spinal cord and its meninges were very much inflamed. The lungs were also highly inflamed, which inflammation had undoubtedly been caused by the long exposure during that very severe day. The cervical portion of the spinal cord was normal in appearance.

Case IV.

Was a van mare, property of Messrs. Gardiner and Co., brewers, Ash. She left in good health on the morning of the 28th January.

Having gone about two miles, the man observed her, in going

down a hill, to have a straggling gait, and the off hind leg seemed to be powerless.

He took her out of the van, and with great difficulty got her into a neighbouring stable. When I saw her she was perspiring profusely, with an occasional fit of rigors, anxious countenance, and visible mucous membranes highly injected. Hind extremities rather stiff, and when pricked with a pin sensation was only partial. The gluteal muscles were hard and rigid. Gave her a mixture of Sol. Aloes ʒvij., Liq. Ammon. Acet. ʒij., Tinct. Aconite ♏xxv., to be followed in three hours by Æth. Chlor. ʒij., Tinct. Aconite (Fleming's) ♏xx., Liq. Ammon. Acet. ʒiiij. When seen in the evening the symptoms had increased, and she died about twelve o'clock that night.

A necropsy showed the spinal cord and its meninges, as far forward as the ninth or tenth dorsal vertebræ, to have suffered from severe inflammatory action, the membranes being almost black. The cervical portion was apparently normal in colour. Deep extravasation of blood in the tissue between the kidneys and spine. All other organs were of a normal appearance.

Should you think the above cases are worth recording in your next month's Journal, I shall be happy to send the symptoms of a similar case, which we have now under treatment, and which I am afraid will prove fatal.

[From the history and symptoms described, we should be inclined to consider the above cases as those of Hæmoglobinuria, or, as it is sometimes designated, Azoturia—not as cases of Cerebro-spinal Meningitis.]

THE PART PLAYED BY FLIES IN THE PRODUCTION OF BURSATTI, AND THE PATHOLOGICAL ANATOMY OF BURSATTI AND CANKER.

BY RICHARD WM. BURKE, M.R.C.V.S., EDINBURGH.

I.—What I have yet said concerning the part played by flies in the production of Bursatti (Veterinary Journal for October, 1880) might suffice for an abstract theorist on the subject, but will not, I am convinced, be enough for the practical man. I

will, therefore, endeavour to place before the profession many more facts, with a view to establish a strong basis for my proposition. My reasons, then, for ascribing to flies such a paramount share in the production of the disease are threefold; and these are evidenced by examining the relation they bear to the appearance of it in—

(*a*) *Special seasons.*
(*b*) *Special countries (districts).*
(*c*) *Special circumstances.*

(*a*) We have seen how the disease usually manifests itself as an enzootic during the summer season, viz., from April to June; and it is at this time of the year that the insect is most abundant.

(*b*) I have called attention to the fact that Bursatti is more prevalent in the upper parts of the country, that is, in and about Patna, Baraily, Delhi, etc.; and it is in these parts that flies are more numerous during the "hot weather" than in others.

It is also well known that the rifeness of the disease is proportionable to the abundance of flies.

Rawul Pindi and Jhelum, in the Punjab, are said to be almost exempt from the appearance of the disease. These districts, enjoying a longer winter and a short, mild summer, are not troubled with flies to the same extent as other parts of India, hence the less frequent occurrence of the disease in them.

(*c*) For the sake of perspicuity, we may sub-divide this heading into—

1. *Stable management.*
2. *The mode of living and treatment received.*

1. The first includes all circumstances favouring the attack of flies, such as—the confinement of horses in stables at all hours of the day; the needless use of "heel-ropes;" the cruel practice of cutting short the tails of animals, and the want of "eye-fringes" during the summer months; collection of secretions within the "sheath" of penis, below the root of the tail, within the inner canthus of the eyes; and accumulations of all kinds of filth within or contiguous to the stables, such as collections of urine, fæcal matter, etc. As an instance of confinement of horses in

stables favouring the onslaught of flies and the subsequent development of the disease, I will call attention to the fact that since the Stud Commission ordered that the horses were to be let loose in the paddocks day and night (summer), excepting during meal-time, there have occurred but very few cases of Bursatti in the stud depôt at Hapur. Again, we shall take the instance of the horses of the "Horse-breeding Department" at Hapur. These animals, through the fear of their breaking into the paddocks of the Stud Department, and there forcibly "covering" the remount mares, are obliged to be kept stabled night and day. What has been the result of this? During the year 1877, from a number of about 1,500 horses in the stud depôt at Hapur, only two or three have been admitted into hospital suffering from Bursatti; whereas in the stables of the Horse-breeding Department, where the stallions are obliged to be confined, there occurred over fifteen cases of the disease among a number of only ninety horses in one season. The field of this mischief is still further widened when these unfortunate stallions are sent to their respective breeding districts. Here the use of the "heel-ropes" by the ignorant Zameendars and Asahmees, together with the filthy surroundings of the villages, the saturation of the stalls with urine and dung, the entire want of grooming, and a thousand other like sources of mischief, work conjointly to invite the principal cause of the disease, viz., the flies; and the result is that a perfectly healthy and valuable animal returns next year in most cases ruined and shattered in its constitution, and covered with Bursatti sores.

2. Under this heading may be considered the fact that out of some forty or more grass-cutters' ponies, carrying grass for the "stallions' stables" at Hapur, it has been recorded that not one case of Bursatti occurred among them during a period of three years. This is easily accounted for when we contrast the condition of these animals with those that are confined to their stables. Throughout the day, whilst the grass-cutters are collecting grass, their ponies are let loose to graze at freedom, and are thus less troubled by flies; whereas we have just seen how numerous are the circumstances favouring the attack of flies under which *stabled* animals are placed.

In a paper read before the Edinburgh Veterinary Medical Association, in 1878, I have stated,—

"(*a*) The disease is prevalent not only at the approach* of the wet season, but usually a sure break-out is witnessed when *flies* are seen to exist in greatest numbers, generally about that period of the year 'when the buds of the linseed plant are seen expanding into mature flowers.' One of the Government studs, situated in the neighbourhood of Patna (Hajeepore), in the Bengal Presidency, was abolished by order of the Government, owing to the great per-centage of deaths† occurring from the constant prevalence of the so-called Bursatti disease. This district of India is well known to have been one of the richest and best in linseed production, and one most infested with flies. Baraily, a city in the North-west Province, also much frequented by flies, is, in proportion, subject to severe outbreaks of Bursatti in the horse.

"(*b*) Ordinary, healthy wounds, when left exposed to the attack of flies during the hot season, or that period which immediately precedes the rains, will degenerate into Bursatti, notwithstanding that the condition of the patient at the time of the accident is strong and muscular, and the animal well developed, with the organs of the body in healthy, normal operation.

"Horses, again, are frequently seen biting or 'nipping' at their legs, from some apparent irritation, and thus producing a sore; the sore so formed is very prone to take on 'unhealthy action,' and rapidly to present the peculiar characteristics of a Bursatti sore. The irritation is invariably noticed when flies are numerous and are seen attacking the horses. Mr. J. Burke informs me he has seen true kunkurs produced on the scalp of man from the sting of a fly, also from that of mosquitoes, all in the short space of two or three days, but early eradication by the use of nitrate of silver checks subsequent ulceration.

* The *approach* of the rainy season is necessarily the hottest period of the year, for without heat no rain could result; and the heat and moisture of the rainy season, together with the luxuriance of the vegetation, are conducive to the propagation of *flies* and *insects*, met with in great variety and splendour in India.

† Indirectly, as all animals in the advanced stages of the disease had to be destroyed.

"(*c*) Another point worthy of notice is, that in a stud hospital of about eighty strong, one-third of which are, perhaps, admitted for simple wounds, very different results have been witnessed in the progress of the wounds in the different animals. Those whose wounds were protected from flies by the addition of sulphur, aloes, camphor, turpentine, and the like to the daily applications, and by careful bandaging, etc., have been discharged from hospital within a very reasonable period; on the other hand, a few animals of the same lot, whose wounds resulted from similar causes, but having been neglected and left exposed, have taken on Bursatti action."

In another part of the same essay I have stated,—

"We have now seen that English horses reaching India in January and February suffer from Bursatti in March and April—a couple of months after. It is the same with Arabs and other breeds of horses. As I have before said, it is not even necessary that they should remain in the country two months before being liable to be attacked by the disease. It altogether depends upon the season when they arrive in that country. English horses, as a rule, reach there between November and February (speaking of the Horse-breeding Department in India), and the hot weather sets in 'down-country' by the 1st of March, and 'up-country' by the 1st of April; and with the setting-in of the hot weather the *flies* make their appearance in swarms; so that horses reaching India (Hapur) in the early part of winter have four or five months of cold weather before them, and those following the former batch, and reaching there about the latter part of winter, have a month or two only between their arrival and the advent of *flies*."

The belief that Bursatti was a parasitic disease, and that it was disseminated by the agency of *water*, as endorsed by Mr. F. Smith and others, is erroneous. This theory is scarcely commensurate with fact when we see that Bursatti occurs quite as, if not more, frequently in animals to whose face and limbs water is never applied for several months at a time. The notion originated, I presume, from observations made in the case of regimental horses, where, perhaps, water is much used in cleaning animals. But it cannot be applied in the case of other animals

where the disorder is equally rife, and the use of water for cleaning the face and limbs interdicted. Hence the supposed instrumentality of *water* in the propagation of this disease is obviously absurd.

The manner in which flies serve to give a *locus standi* to the disease has been fully explained in the VETERINARY JOURNAL for October, 1880.

II.—PATHOLOGICAL ANATOMY OF BURSATTI AND CANKER.

I had prepared sectioned and "mounted" specimens of Bursatti and Canker in common, nearly two years ago; and in a paper which I prepared for the Edinburgh Veterinary Medical Association, Clyde Street, I described in full, though briefly, the results of my examination of all these. I here append that description:—

"In order to place the pathological anatomy of these two diseases clearly before you, we must adopt certain methods of description which will be both intelligent and precise. To accomplish which we must trace the 'thread' of health, and note where it fails anatomically; we shall then have arrived at the true features of the diseases. For this purpose we may divide their study into—

(*a*) *Macroscopic appearances.*
(*b*) *Microscopic appearances.*

"(*a*) A thin section, 'mounted' on a slide and placed before the light, shows a structure very irregularly traversed by bands of fibrous tissue, in the meshes of which are enclosed, every here and there, concentric plates, condensed and more opaque than their surroundings. These latter are the sectioned appearances of such kunkurs as have not yet received calcareous deposition. In places where the kunkurs have attained to maturity (if I may so term it) by calcareous change, the act of sectioning causes their dislodgment and the resulting circular or oval spaces which are also seen to be occupying the field of the section. But if the section be of parts rapidly developed, as from the superficial layers of the fungoid growths for example, or in some cases from a tumour which has attained a considerable size in a rapid space of time, this fibroid diffusion is more or less absent, the

structure then presenting more of a cellular appearance, under a low power, with a slightly fibrillated matrix.

"(*b*) On examining the sections under $\frac{1}{4}$th, $\frac{1}{8}$th, and $\frac{1}{12}$th objectives, what do we see? In the earlier growths the cells predominate over the matrix, and are usually smaller in size than the cells to be seen in the section from a sore of some standing, especially if from the lower layers of the growth.

"In some cases there is an irregular commingling of fibres and cells (fig. 1).

Fig. 1.

"In many of the sections examined I have observed numerous small, communicating saccules or aceni, lined with small spindle-shaped, round, or oval epithelial cells, the interacenous spaces being in places occupied by dense fibrous tissue. This is characteristic of 'Epithelioma,'* when met with in structures not primarily glandular. It is otherwise known as *adenomatous structure.*

"1. *Matrix.*—This is made up in the main of white fibres resulting from the spindle cells (fig. 5, plate I., to the left), and partly from the included areolar tissue, with few coarse (yellow elastic) fibres. This is brought out very beautifully by the magenta solution, which occasions a dark red colour in the *coarse*, while it leaves the *white* fibres unaffected. The arrangement of the first resembles precisely that of ordinary white fibres elsewhere

* The term "*Epithelioma*" simply means an ordinary epithelial tumour, and conveys no meaning of Cancer. Hence I have adopted the term *Cancroid Epithelioma*, or, better still, *Epithelial Cancer.*

—viz., they are either parallel (fig. 1, to the right), or forming hillocks or undulating projections and depressions in their course (it is not necessary to insert a separate drawing of it here); or, when resulting from spindle-shaped cells around the cells which are undergoing augmented endogenous multiplication and outward expansion, they are observed to be arranged in concentric layers (fig. 2). It is to be here noted that the concentric method of arrangement differs from health, and is a disease condition characteristic of 'Epithelioma,' worthy of special notice.

Fig. 2.

"On chemical test the white fibres behave precisely in the same manner as ordinary white fibrous tissue in health, the addition of acetic acid converting them into a collagenous mass.

"I fail to recognise the characters described by Mr. F. Smith, M.R.C.V.S., as seen under his microscope, the individual fibres themselves being so extremely fine and delicate, and *homogeneous* in appearance, that to identify the phenomena displayed under his eye seems to me to be an impossibility. 'The first stage of growth of the tumour,' according to him, 'seems to consist in the appearance of certain large fibres faintly striated longitudinally.' . . 'These gradually become infiltrated with the *specific "brownish cells,"* which seem to become fitted into the striæ between the smaller fibres, which result from longitudinal splitting of the larger ones'! Rather a bald piece of speculative pathology.

"At most I can detect but an indistinct nomination in the component *fibrillæ* given by the lime-water and chloride of sodium solutions. Observe: 'The term *fibre*, as applied to microscopical objects, has not been well defined. The word has been applied

to the delicate line-like markings seen when a band of white fibrous tissue is examined. Although the fibrous band seems to be composed of a collection of minute threads, it is impossible to separate white fibrous tissue into a number of minute individual elementary fibres. The tissue may be truly said to exhibit a fibrous appearance under the microscope, but it is not possible to *split* it into fibres of any determinate size' ('The Microscope in Medicine,' by Dr. Lionel S. Beale).

"'It will be observed,' says the author of 'Bursatti,' Mr. F. Smith, M.R.C.V.S., 'that the large *primary* fibres are the *parent* stage of the smaller ones, into which they become converted by infiltration with the *specific brownish cell*, and by *longitudinal splitting*.' The so-called '*primary*' and '*parent*' fibre is, we imagine, in reality nothing more than an ordinary white fibre, and the '*longitudinal splittings*' its component fibrillæ; the '*brown cells*,' as it were, tearing away the connecting cement (?), and infiltrating the interstices formed by the fibrillæ, giving rise to, 'by an extension of the process,' . . . . . 'the fibrous reticulum, with the cells in its meshes'! that is, constituting in the end, I suppose, a somewhat similar arrangement to that seen to a certain extent in my drawing, fig. 5, plate I. I would, however, suggest that the increase in the fibrous elements observed in these sections are the result not of *splitting* of '*parent*' fibres, but of *general compression*, the spindle-shaped cells to the left of fig. 5, plate I., occasioning the '*primary*' fibres seen on the right of the figure. Not infrequently the fibres become quite transparent upon being treated with *dilute* acetic acid.

"Mr. F. Smith would also have us call some of these fibres '*hyphal tubes*'! But this appears to us to be somewhat chimerical. In fact, the '*hyphal tubes*' with '*bright extremities*,' if Mr. Smith would permit us to venture a suggestion, we would say were in reality ordinary *coarse* (*yellow elastic*) *fibres*. And, although usually *solid*, the coarse fibres in health sometimes show *crevices*, *fissures*, and *excavations*.

"2. *Cells*.—These are the ordinary squamous epithelial cells of the part, having undergone such modifications as are generally admitted to be characteristic of Cancer. The first thing that

strikes the eye of the observer in the field of the microscope *is the immensely granular appearance of the cell-contents as presented by these cells;* the cell-wall is present; and there are usually two, three, or more nuclei (masses of 'bioplasm,' of Beale), either distinctly (fig. 3) or indistinctly (fig. 4) mapped out, with several nucleoli.

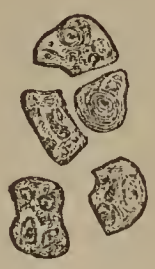

Fig. 3.

Fig. 4.

"The cells represented in fig. 4 seem to me to be the so-called 'brown cells' of Smith. [If the author of "Specific Brown Cells" will kindly refer to my article on "Bursatti," VETERINARY JOURNAL, October, 1880, he will there find it stated (on the authority of Sir James Paget) that *pigmentation* of cells is a process having nothing of the nature "*specific*" about it, but that it is an accidental phenomenon, explaining nothing of the nature of the etiology of the disease wherein it manifests itself. Hence it merits no special consideration here.]

"Some of the cells are in a state of fatty degeneration (fig. 5)."

Fig. 5.

(To be continued.)

CLINICAL NOTES.

BY T. WALLEY, PRINCIPAL, EDINBURGH VETERINARY COLLEGE.

Invagination and Mesenteric Strangulation of the Ileum.—Mare.

SOME time ago I received from Mr. Mitchell, of Stranraer, the ileum and mesentery of a mare, with the following history:—

The animal had aborted about two months prior to last illness, and subsequent to aborting had suffered on several occasions

from Colic ; became lean and unthrifty. At nine a.m. on the day before her death, while at work, she showed symptoms of Colic. She was immediately taken home, and an anodyne draught, composed of 2 ozs. each Tincture Opium and Chloric Æther, administered. At this time the most pronounced symptom was sitting on the haunches, alternately lying down, but not rising. (Mr. Mitchell considers this very diagnostic of Strangulation, at least as compared with Colic Impaction, as in the latter the animal rises, or nearly so, after sitting for a short time.) About twelve o'clock an attempt was made to administer a dose of physic, but it failed ; mustard, followed by hot cloths, was applied to the abdomen, and the anodyne draught repeated.

Mr. Mitchell did not see his patient until nine o'clock, when he found the following symptoms :—Pulse, 90 ; expression of countenance anxious, but eye bright ; respiration only slightly accelerated in the intervals of relief from pain, which was paroxysmal ; external temperature normal. On examination *per rectum*, Mr. M. found the small intestines tympanitic, large empty.

The treatment adopted by Mr. M. was the administration of Acid Carbolic with Oleum Lin., and Mustard to the abdomen. He stayed with the mare until twelve, at which time she was standing ; but shortly after his departure she commenced to perambulate the box in a circular direction, continuing the motion until a few minutes before dissolution, which occurred about nine a.m., twenty-four hours from the time she was first observed unwell. Mr. Mitchell further remarks that there was no straining when he introduced his hand into the rectum, and the parts had a flabby feel. These conditions he thinks diagnostic as between Strangulation and Calculus or Indigestion, in which there is usually violent straining when rectal exploration is had recourse to.

Condition of the Bowels.—On examining the bowel sent by Mr. Mitchell, I found a most remarkable *Invagination*, complicated with *Mesenteric Strangulation*, the invaginated portion of bowel being involved in the Strangulation, showing that the latter must have been the secondary lesion ; its production being no doubt facilitated by the increased weight of the invaginated bowel, and the violent spasmodic action which must have been going on in its coats.

The invaginated portion measured two yards, but did not present any unusual characteristics except in the extreme length and the complication of Strangulation.

The remarks made by Mr. Mitchell as to the differential symptoms are worthy of notice, though I have myself seen animals strain violently in torsion and allied lesions, when the hand has been introduced into the rectum. The tympanitic condition of the small bowel is easily accounted for.

Medullary Sarcoma at Root of Mesentery, Primary, with Secondary Intestinal Lesions.

Subject.—Black mare, — years old (light cart).

History.—I examined her as to soundness 18th November, 1880. Was then in *good* condition, but had a patch of *Mange* on withers, which I pointed out to owner, and advised non-purchase. Mare was returned ; but a second purchase proving unsatisfactory, an exchange was made about November 30th. I did not see the mare until about 6th December, when the Mange had extended very considerably, and she had become emaciated, and had a very unthrifty appearance.

December 8th.—Admitted to College Infirmary, and treated for Mange. Improved markedly, and was discharged on 20th. Saw her occasionally after this date, and about middle of January her appetite became fickle and emaciation proceeded apace. Good food and tonic medicines administered, but without any change for the better.

February 15th, 1881.—Again admitted to infirmary ; very anæmic, weak, and debilitated, which I attributed to the effects of the Mange. Examined blood ; it was charged with leucocytes, did not coagulate firmly, and there was excess of serum. About the 20th diarrhœa set in, with occasional colicky pains. Nothing specific about discharges.

28th.—Looked livelier. Had been having Opium, Chalk, Ferri Carb., and Potass Bicarb. Fæces normal. Thought of having recourse to transfusion, but next morning the mare was found dead in box. I anticipated *ante-mortem* cardiac clotting, which on *post-mortem* proved to be the case.

Autopsy revealed Aneurism and Thrombosis of anterior mesen-

teric artery. A semi-fluctuating tumour in mesentery at its roto, somewhat globular in shape, lobulated and encapsuled with signs of recent inflammation of contiguous mesentery. Tumour about size of two fists placed side by side.

On incision of the capsule, the characteristic medullary matter of Medullary Sarcoma extruded; microscopic examination by Mr. Grey proving its nature.

Along the course of the free border of the ileum five patches of thickening (varying in size from the doubled fists to a florin) with pigmentation, were observed. The largest patch internally resembled a sacculation produced by laceration of the mucous membrane and sub-mucous tissue, the edges of the sac being round and thickened, and its bottom also much thickened, with a quantity of degenerated intestinal structure of a blackish hue clinging to it. On cutting into the thickened intestinal wall, the conditions seen in the mesenteric tumour were observed, but not so far advanced. The other patches presented circumscribed ragged ulcers, with slight depression below surface, in the smallest, to raised patches, with a peripheral extension, in the larger; the altered mucosa of which was pigmented and firm—Melanotic Sarcoma.

Liver and kidneys too much altered to get any satisfactory microscopic examination, as horse had lain thirty-six hours.

I had attributed this animal's illness to acute Anæmia and Ulceration of the bowels.

FLUKE IN THE LUNGS OF CATTLE.

BY MATTHEW HEDLEY, M.R.C.V.S., TRAVELLING INSPECTOR, VETERINARY DEPARTMENT, IRELAND.

SINCE my contribution to the VETERINARY JOURNAL in June, on the above subject, a large number of instances of this very interesting freak of nature have come under my notice. I have had an opportunity of making a few observations which may be brought before the profession.

The condition of the portion of lung containing the *Distoma hepaticum* varies according to its age. The older the capsule

is, the harder and denser are its walls. These walls appear to become calcified. Such capsules contain a variable quantity of a brownish fluid, or instead of a fluid it is thick, and like normal pus in consistence only. The Distoma found in such a capsule is generally well-developed and sexually mature. Other and younger capsules have younger Distomata. Instead of having a thick wall, as above described, some are more cartilaginous. Unless the search is made carefully, the Distoma is very easily overlooked, but when found it has never been either full grown or large. I have never found more than one Distoma in each capsule. Only in one instance have I found two capsules in close proximity to each other. In all cases when I have had an opportunity to examine the livers of cattle in whose lungs I have discovered the flukes, I have found them to be also attacked with *Distoma hepaticum*. I have submitted several pieces of lung to the editor of the VETERINARY JOURNAL, which contained capsules. Some of the capsules I cut to ascertain whether they were fluke capsules or not; others I sent intact, thus affording him an opportunity of observing the contents of the capsule when freshly cut.

Including the eight pieces of lung thus forwarded, I have cut and examined thirteen other capsules. When such a number of cases have come under my notice, I am inclined to think that it is rather common. I have not had any opportunity of examining the lungs of sheep, and therefore am unable to offer any remarks about them.

APOMORPHIA.

BY J. DOWLING ALLMAN, A.P.S., LONDON.

THIS non-officinal alkaloid is not known in veterinary science, but I think it can be introduced with advantage as a powerful and efficient emetic in cases of accidental poisoning of dogs. The substance was first discovered by Dr. Matthieson and C. R. A. Wright (*Proceedings of the Royal Society*, vol. xvii., p. 455), who made it by the action of a strong solution of hydrochloric acid upon morphia; but a better plan of making it is that of E. L.

Mayer, in which the morphia is treated with a solution of the chloride of zinc at 120° C.

It occurs as a snow-white powder, which is permanent when dry, but if it at all absorbs moisture it very quickly changes to green. Its solution is liable to the same change, which is most likely an oxidation, and it will be noticed that if the solution be kept for a few weeks the green tint turns into black. If bichromate of potash be added to it, it will change to a dense yellow orange, and with neutral chloride of iron it strikes an amethyst colour. It is chemically and physiologically different from the alkaloid morphia, is soluble in cold water, and owing to the very great rapidity with which it undergoes decomposition when in solution, it should only be dissolved at the time of using. Dr. Gee (*St. Bartholomew's Hospital Reports*, vol. v., p. 215) has proved that the substance is a most certain and prompt emetic. He found that so small a dose as a tenth of a grain, when injected under the skin, was sufficient to cause vomiting in ten minutes. His beautiful experiments have been fully confirmed by some other eminent men, among whom may be mentioned Dr. F. Pierce (*British Medical Journal*, 1870, p. 274). Dr. Pierce remarks that the dose employed by Dr. Gee is too large, and that he found one-fifteenth of a grain amply sufficient to empty the stomach in from five to ten minutes. Apomorphia should take, I consider, a prominent position in veterinary practice, especially with those gentlemen who pay more attention to canine practice, as it will be found such a prompt and useful emetic in cases of valuable dogs accidentally picking up some poison. It has a decided advantage over the ordinary emetics, as it can be injected subcutaneously with the hypodermic syringe,* in the loose skin under the arm. The dose I should advise in cases of accidental poisoning would be from one-quarter grain to one-half grain dissolved in a little water. My friend Mr. L. Butters, M.R.C.V.S., of Liverpool, who has used my celebrated hypodermic solutions to a very great extent, since I introduced them

* The best hypodermic syringe for veterinary use is made by Messrs. Arnold and Sons. Many of the syringes sold are not fit for use, as the piston is made of brass, and the solutions acting upon it change it into acetate of copper, which is highly detrimental.—J. D. A.

in 1878, generally injects into the jugular vein. This is certainly, to say the least of it, heroic practice in the extreme; but Mr. Butters assures me that he has never found it attended with any evil consequences, and that he finds the physiological action of the drugs employed more conspicuous than when injected into the arm. But on the whole, and for safety's sake, I would recommend the loose skin under the arm. If the Apormorphia be given by the stomach, about double the hypodermic dose should be exhibited.

EXTRAORDINARY CASE OF IMPACTION OF THE STOMACH AND ŒSOPHAGUS OF A HORSE.

BY R. F. FROST, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, RANGOON, BURMAH.

ON the 18th of April, I was asked to prescribe for a horse, the property of Capt. ——, R.A.

The horse was about eighteen years old, and in low condition.

For three days previous to my seeing him he had not eaten any solid food. He took a small quantity of green grass and drank a little water, but would touch nothing else.

When I saw the horse on the evening of the 18th, he gave indications of Colic, arising from an accumulation of fæces in the intestines.

Gave a strong aloetic purgative, and to allay the slight pain, injected subcutaneously Atropiæ one-fifth of a grain.

Ordered hot fomentations to the abdomen, and enemata of warm water and soap every two hours.

Give nothing but sloppy food.

April 19th, morning.—Little or no change. Pulse 45; no abatement in the colicky pains. Removed four quarts of blood from the jugular vein, and injected subcutaneously Atropiæ one-fifth of a grain.

6 p.m.—The bowels have begun to respond; there is considerable borborygmus. Continue hot fomentations, and repeat subcutaneously injection of Atropiæ.

April 20th.—Worse. Pulse 74; very restless, no motion of the bowels, no vermicular action. Owing to derangement of my

hypodermic syringe, I cannot use it. Give Opium ʒiij., Calomel ϑ ij. in ball, and repeat in six hours.

6 p.m.—Seems livelier and easier. Pulse gone down to 65; drank gruel. Repeat opiate, and continue fomentations.

April 21st.—Very restless, moving about the box continually, as if suffering great pain. Pulse 75; no motion of bowels. Repeat opium and calomel; continue fomentations.

6 p.m.—Same as in morning; inject subcutaneously Morphiæ grs. three, and Atropiæ one-tenth of a grain.

April 22nd, morning.—Spent a quiet night. Pulse 60. Pain less, but breathing accelerated. Refused all nourishment. Still no motion of bowels. Inject Morphiæ two grains; foment as before.

7 p.m.—Animal suffering from choking. Cannot account for it, unless ball given yesterday morning is impacted in posterior part of œsophagus. The impediment is in the thoracic portion of the œsophagus. The only appliance to hand is a rope, and this can be passed a short distance into the thorax, but no further.

23rd.—On visiting patient early this morning I find, to my astonishment, that instead of the impaction being confined to the thoracic portion of the œsophagus, it has now extended half-way up the cervical portion of that organ. I passed a probang, but to no purpose; so I instantly decided on œsophagotomy. I need not enter into details regarding the operation; suffice it to add that by the means of large bullet forceps I was enabled to remove an immense quantity of masticated straw from about six inches above and below the opening made in the œsophagus.

As I could not reach further in a backward direction, and as syringing failed to remove more than a very small quantity of the impacted mass, I was obliged to desist.

My poor patient was so exhausted that he soon after died without a struggle.

Post-mortem made half an hour after death, in company with Surgeon-Major E. B. Grant:—

Slight congestion of mucous membrane of the intestines. Small intestines nearly empty. Liver soft; other viscera normal. Stomach full to repletion. Thoracic portion of œsophagus firmly impacted. Removed stomach and œsophagus for more careful examination.

Before proceeding further, I may here add that I fully expected to find the ball given on the 21st firmly impacted in the constricted portion of the gullet close to the diaphragm, but no such impediment was found.

I have said that the small intestines were empty. The stomach was so completely filled that I do not exaggerate when I say that it would not contain another spoonful. Its contents was a mixture of oats, grain, and hay. This mixture must have been in the stomach for a period of eight days, yet it had not been in any way acted upon by the gastric juice.

Following up the impacted mass in the œsophagus, I was surprised to notice that there was no interruption between itself and that in the stomach. The mass in the gullet was continuous with that in the stomach. *Even at the cardiac orifice the impediment existed.*

The opiate ball which was given on the morning of the 21st, was found on the surface of the mass of ingesta in the stomach; no change had taken place in it. It is now before me, and the only change that it underwent during its forty-eight hours' sojourn in the stomach was the bursting of the paper. Particular attention was paid to the condition of the pyloric orifice, with the view of ascertaining if any constriction existed at this part. But neither constriction nor any form of derangement could be detected.

The walls of the stomach were atrophied to a considerable degree. In parts the tissues were so thin that they were semi-transparent. The muscular tissue, in particular, was very much atrophied.

To this fact I am inclined to attribute the impaction. I may not be correct, but I look upon this case as one of complete paralysis of the stomach.

For days, I conjecture, there had been entire suspension of the movements of the stomach; there had been complete arrest of gastric secretion, as may be proved by the condition in which the ingesta was found: no change had taken place in it beyond what had been effected by mastication. Even the opiate ball, which had been given forty-eight hours previously, remained unaltered. Had any gastric movements occurred, the ball would

have been carried towards the pyloric orifice, or at all events it would have been so changed as to be beyond the power of discovery by the naked eye.

I forgot to mention that the œsophagus was impacted with masticated bedding for a distance of three feet seven inches, from the cardiac opening forwards.

I shall feel obliged if you will state whether such cases are common ; I have neither heard nor read of a similar case.

[Such cases must be very rare indeed.]

Editorial.

THE VETERINARY SURGEONS' BILL.

As will be seen from our Parliamentary intelligence, the Veterinary Surgeons' Bill was read a second time in the House of Lords on May 31st, the only opponents being the Duke of Marlborough and Marquis of Salisbury, neither of whom appear to be much conversant with veterinary matters in these kingdoms ; in this respect offering a marked contrast to Lord Spencer and the Lord President of the Privy Council, both of whom spoke with judgment, and flatteringly, of the profession and its claims to public support. On June 23rd the Bill passed through Committee, and on this occasion the Lord President intimated that he would move several important amendments when it was reported upon. These amendments we are now in possession of, and their importance is so great that we deem it our duty to publish them. We published the Bill as it was introduced by Lord Aberdare, in the Journal for May, and reference to this will allow the proposed amendment to be understood.

After Clause 5, Clause A is introduced, dealing with the removal of a name from the register, and defining the heads of offences for which such removal may be justified. Clause B details the procedure for removal or restoration of name. Clause C deals with the penalty for wilful falsification of register. Clause D is concerned with the registration of colonial or foreign practitioners who possess a recognised diploma, and defines what is meant by a diploma. Clause E confirms the Charters of the Royal College of Veterinary Surgeons by Act of Parliament, but permits making amendments or additions thereto. It is in Clause F that the portion of the amendments which most deeply affects the veterinary profession commences. This portion, which orders that the title of existing veterinary practitioners is to be registered, adds :—

(1) Where at the passing of this Act any person practises and has continuously for not less than five years next before the passing of this Act practised veterinary surgery in the United Kingdom, but is not on

the register of veterinary surgeons, he shall be entitled to be so registered at any time within one year after the passing of this Act, without examination, on such terms as to payment of fees, and as to other matters, as the Council of the said Royal College, with the approval of the Privy Council, directs.

(2) On any person applying for registration under this section, and producing to the Council of the said Royal College evidence of his title to be so registered, by statutory declarations of himself and of other persons able to testify on his behalf, or such other evidence as that Council reasonably requires, he shall be admitted and registered under direction of that Council accordingly.

(3) If a person is refused registration under this section the Council of the said Royal College shall, if required by him, state in writing the reason for that refusal, and he may appeal to the Privy Council, and the Privy Council, after communication with the Council of the said Royal College, may either dismiss the appeal or order that Council to admit and register the appellant under this section.

(4) The names of the persons registered under this section shall be placed in a separate division of the register of veterinary surgeons; and every such person shall be designated a licentiate of the Royal College of Veterinary Surgeons, but shall not be deemed to be a member of the said Royal College within the said Charters of this Act.

Clause G. If after the passing of this Act any person not being a fellow or a member of the Royal College of Veterinary Surgeons takes or uses any name, title, addition, or description, by means of initials or letters placed after his name, or otherwise, stating or implying that he is a fellow or a member of the Royal College of Veterinary Surgeons, he shall be liable to a fine not exceeding twenty pounds.

Clause H. (1) If, after the 31st December, 1883, any person other than a person who for the time being is on the register of veterinary surgeons, or holds the veterinary certificate of the Highland and Agricultural Society of Scotland, takes or uses the title of veterinary surgeon or veterinary practitioner, or any name, title, addition, or description, stating or implying that he is a veterinary surgeon or a practitioner of veterinary surgery, or is specially qualified to practise the same, he shall be liable to a fine not exceeding twenty pounds.

(2) From and after the same day a person other than as aforesaid shall not be entitled to recover any fee or charge in any court for performing any veterinary operation, or for giving any veterinary attendance or advice, or for acting in any manner as a veterinary surgeon or veterinary practitioner, or for practising in any case veterinary surgery, or any branch thereof.

Thus it will be seen that the Bill, if these amendments are incorporated with it, will be of a far more important character than before, and place the profession in these kingdoms on quite an equal footing with the medical profession. It would be premature to examine the amendments in all their bearings at present, as they may be considerably modified before the Bill becomes an Act; but of their value, looking to the future, there can be no doubt whatever. We question if the veterinary

profession on the Continent is so well protected as it will be in this country.

But two points in the amendments must be alluded to. The first is the admission of the names of unqualified men to the register of the Royal College, and the next is the title by which they are to be registered. For reasons which are not far to seek, but the principal of which was that the Royal College never attempted to protect the title of its graduates, the unqualified men made out such a good case that the Lord President and Lord Aberdare could not resist their claim, and a retrospective period of five years was fixed upon for admission. The title originally proposed by Earl Spencer was membership, but this was changed to licentiate. This, however, is a most objectionable designation, as the Royal College has never licensed these men, and knows nothing of their capabilities. We have urged that they be styled "registered non-members," to protect them from the penal operations of the Act, and that they have no voice or control in the affairs of the profession. We have also urged that the retrospective period be ten years, and these alterations in the amendments, together with others we proposed—notably, exemption from serving on juries—Lord Aberdare will bring forward when the Bill is again brought in for report.

A great deal might be said on other features of the amendments, but we must reserve this for another occasion. Our grateful thanks are due to the Lord President and the introducer of the Bill, Lord Aberdare, for the deep interest they have manifested in the profession, and the trouble and anxiety they have encountered in their efforts to serve. And not less grateful are we to all the Veterinary Medical Associations in England (except one), to that of the West of Scotland, as well as the North of Ireland, to the students of the Royal Veterinary College, and to Mr. Simcocks, of Drogheda (who energetically canvassed the whole of Ireland in a few days), for promptly sending in memorials and petitions to the House of Lords, in order to strengthen our hands against the demands of the unqualified men. These memorials and petitions have, we believe, been of great value, and may prove of still further service during the passage of the Bill through the House of Commons; and they demonstrated in the most startling manner, not only by the promptitude with which they were drawn up and despatched, but by the terms in which they were couched, that not only is the profession united as it never was before, but that it is a power in the land.

The Highland Society opposed the Bill, for the reasons shown in the report of its proceedings. Any attempt to improve the position of the profession appears to act upon a small section in Edinburgh as a red rag is said to do upon a bull. We refer our readers to the language used at that meeting, and also to the sadly indiscreet, if not something worse, language employed at the Scottish Metropolitan Veterinary Medical Society's gathering, as evidence that the old Adam still lingers in the Scottish capital.

But this morbid spirit will not delay the course of events that must eventually culminate in a very different state of matters than that which fostered and stimulated it.

We hope, in the Journal for August, to have good news to communicate. In the meantime we would beg our colleagues who have influence with Members of Parliament, to exercise it in favour of the Bill when it reaches the House of Commons, and we will communicate directly with Presidents of Associations, should the weight of these be again required, or should anything important transpire.

THE ANATOMY AND PHYSIOLOGY OF THE THIRD STOMACH OF RUMINANTS.

(*Continued from vol. xii., page* 192.)

II.—Histology.

Having made ourselves familiar with the appearances presented by the third stomach to the naked eye, we propose next to examine them by the aid of the microscope.

On making a transverse section through one of the psalter leaves, we notice on both sides a streaky layer, coloured yellow by picrocarmine tincture, forming the superficial surface, and covering the already described macroscopical papillæ. This is the *stratum corneum*, formed of flat horny scales placed one above another, so that on a transverse section it presents the fibrous appearance just noticed. Exposed to the action of concentrated alkalies or acids, the scales swell out, become clear, lighter in colour, and more cellular in form, and, finally, transparent and invisible. They strongly resist diluted acids and alkalies, as well as peptic juice. In a digestive oven, I placed portions of this layer removed shortly after death, together with pepsin, the activity of which had been previously tested. The lower layers of epithelium became dissolved, but the upper ones continued for several days to resist the action of the heat and pepsin, remaining as a continuous layer; proving that we have here to do with a horny material. Beneath this horny layer, on both sides of the section, are layers of epithelium, whose cells present the most diverse shapes. Some are long, oval, or spindle-shaped cells, which, fitting closely on the papillæ, appear half-moon shaped. Others are angular and polygonal. Their contents are soft and granular, and present numerous shining fat-corpuscles. The nucleus is very clear, and possesses one or more nucleoli. The deepest layer consists of very soft round cells, with granular contents and comparatively large nuclei.

All the above-described layers form the *stratum epitheliale*, which, during life, is firmly attached to the structures beneath, as we have proved by examining it immediately after death. A short time subsequently, however, the epithelium, like that of the rumen, may be easily detached.

The epithelium is situated upon the *propria mucosæ*, which forms the macroscopical papillæ. In this position the epithelial layer is thicker than between the papillæ, especially in the reticulum half, where they have such a hard and long horny apex.

The *propria mucosæ* consists essentially of connective and elastic tissue and vessels. The elastic tissue is especially rich, forming a network extending from the *muscularis mucosæ* to the epithelium, and is best studied by treating the section with potassium hydrate or formic acid. In these meshes lies the loose connective tissue, its bundles of fibres crossing one another in all directions, the whole forming a tolerably firm tissue. Besides the ordinary connective tissue cells, are numerous emigrated corpuscles, and sometimes Waldeyer plasma cells.

The *propria mucosæ* sends into the epithelial layer wart-like conical processes, which are only visible on section, and not from the surface, because the spaces between them are filled up with epithelial cells, and the apices covered by these cells and the horny layer ; so that no irregularities appear on the surface. This second papillary layer exists both in and between the large macroscopical papillæ, and is only visible when the epithelium has been removed. This may be effected by means of warm or cold water, or by treatment with alkalies. The method, however, by which this papillary layer may be best demonstrated, is the following : A portion of a leaf is tied to the end of a cylinder open at both ends ; the latter is then filled with peptic juice and placed in another vessel filled with the same material, so that both sides of the leaf are exposed to its action. After allowing the juice to act on the leaf for some time (12 to 24 hours) at a temperature of 35-40° C., the epithelial layer may be removed without injuring the papillæ in the slightest degree. The surface of the lamina then appears studded with small processes, as that of the duodenum is with villi. They consist of connective and elastic tissue, and sometimes we may observe one or more spindle-shaped muscular cells. In a well-injected specimen a loop of blood-vessels is, as a rule, observable. The exposed surface of the large papillæ appears tolerably thickly set with these smaller ones.

Beneath the *propria mucosæ* on both sides of the preparation, is a muscular layer which has been cut through in preparing the transverse section ; so that only the cut ends of the fibres are visible. On both sides of it is loose connective tissue. This layer is the *muscularis mucosæ*. In the centre of the transverse section of the leaf is seen still another muscular layer running parallel with the section, and much thicker than the two lateral muscular layers taken together, from which it is separated by the connective tissue just mentioned. This middle layer becomes gradually thinner as it approaches the end of the leaf, and finally disappears ; whilst the lateral ones increase in thickness, especially at the free extremity, where they form an enlargement.

In addition to the above, we may often observe in the section large blood-vessels situated in the central muscular layer, and giving off lateral branches. Later on, however, we shall return to the distribution of the blood-vessels and nerves.

In reference to the macroscopical papillæ, we may further mention the following : They represent elevations of the entire mucous membrane, and present, therefore, the characteristics which we have described as belonging to the latter. They are rich in elastic tissue, and always present a considerable amount of muscular structure which is in direct continuation with the two lateral layers. By this means they are rendered capable of contracting and of becoming strong, firm, resisting bodies. I have not succeeded in discovering any glandular or tubular structures in the leaves.

Concerning the structure of the outer walls of the omasum, a transverse section shows us the following : On the outer side—that is, on the side opposite to that from which the leaves originate—is a thin connective tissue membrane, the *serosa*, separated by a loose *sub-serosa*, which often contains adipose tissue, and in which are frequently to be seen blood-vessels running longitudinally and transversely from a muscular layer whose fibres appear transverse to the section. Further inwards is a second thicker muscular stratum, three or four times as strong as the former, and running in the same direction as the section. This is separated by loose connective tissue —the sub-mucosa—from another thin transverse muscular layer which we recognise as the *muscularis mucosæ*. This is covered by the *propria mucosæ*, which is constructed in a precisely similar manner to that which we have described in a section of a leaf.

The leaves represent not only a doubling of the entire mucous membrane, but also a portion of the outer muscular structures. The two lateral layers are processes of the *muscularis mucosæ*, the connective tissue beneath them of the sub-mucosa, and the central muscular layer of the inner stratum of the true muscular coat of the omasum.

In a transverse section of the bridge, we observe the following : The *stratum epitheliale* and *proprium mucosæ* are formed in a similar manner to the rest of the wall. The muscular structures are arranged in the following manner : Below the epithelial layer we see bundles of muscular fibres, often widely apart from one another, and running in a transverse direction—that is, from before to behind. They are remarkably strong near the lips of the omasum groove.

To this succeeds a longitudinal layer (that is running from one side of the bridge to the other), whilst still more outwards is another transverse layer. Between the bundles are situated adipose and connective tissue.

A section through the fold situated in the omasum-abomasum opening shows that, in the middle, it possesses a slight muscular layer derived from both stomachs.

From the above description we may sum up the structure of the psalter as follows : The psalter wall is composed of three coats—*serous*, *muscular*, and *mucous*. The external coat, or *serosa*, possesses a loose sub-serosa, in which fat and blood-vessels are often noticeable. The middle, or muscular coat, consists of two layers, the outer of which extends from the reticulum to the abomasum openings ; it is but slightly developed, and in the bridge is made up only of bundles widely apart. The other runs in a circular manner from the bridge, over the greater curvature, and back again to the bridge on the other side.

This layer extends into the interior of the leaves, and forms there the central layer whose fibres do not extend as far as the free extremity, but terminate in the enlargement which is made up of fibres running in a longitudinal direction from before to behind. This enlargement, therefore, represents the insertion of the central muscular stratum.

On this double-stratified muscularis lies the sub-mucosa with its blood-vessels and nerves, and covered by the *muscularis mucosæ*, whose fibres run longitudinally from the reticulum to the abomasum. Both layers assist in forming the leaves ; so that on each side lies a muscular layer whose fibres run from the origin of the leaves at the reticulum end, where they compose a considerable mass, to the abomasum, forming on their course the enlargement we have described as existing on the free border of each leaf. The muscular apparatus of the laminæ consists, then, of a strong central layer, originating from the periphery and two lateral layers running from the second to the fourth stomach. The first is in connection with the circular muscular coat of the outer wall, whilst the latter represents a portion of the *muscularis mucosæ*.

Inwards from the *muscularis mucosæ* is the *propria mucosæ*, possessing a papillary stratum, and being doubled, assists in forming the leaves. It is covered by epithelium, the upper layers of which are horny in character.

The muscular structure of the bridge deserves especial mention. The longitudinal layer beneath the mucosa becomes very strong, and its bundles placed much closer together as it approaches the omasum-abomasum opening. It divides, however, immediately into two portions, one of which proceeds to the right, the other to the left, to reach a muscular enlargement existing here.

The transverse layer succeeding outwards the above, is in connection on both sides with the circular muscular layer of the rest of the wall. At the omasum-abomasum opening it suddenly forms a thickening, which is in con-

nection with the above-mentioned longitudinal layer. It has a diameter of about two centimetres, and extends not only on both sides of the opening, but also above it, forming in this manner a sphincter.

This sphincter is, then, a partial thickening (that is, an increase of fibres) of the transverse muscular layer of the bridge, whose continuation forms the circular muscular coat of the wall. It is situated a slight distance from the opening, so that a number of leaves, instead of terminating in it, pass beyond.

This transverse layer of the bridge is succeeded outwards by another longitudinal layer, which is, however, but slightly developed. The action of the transverse layers, especially when combined with that of the psalter, must be to narrow the space existing between the bridge and the leaves.

The longitudinal fibres approximate the two openings, principally by drawing the anterior opening towards the fixed point, viz., the posterior orifice.

The following is the course of the blood-vessels of the psalter : From the sub-serosa the main trunks pass through the muscular coats to the sub-mucosa, where they are arranged in a longitudinal manner. Somewhat large branches are given off at tolerably equal distances, and ascend into the leaves, being situated in the central muscular layer. They divide but little until reaching the free border, where they converge towards one another, often dividing into two branches, which, uniting, form arches or loops similar to the *rami intestinales arteriæ mesentericæ superioris equi*. The arches are, however, not so curved, but form rather a continuous vessel which runs parallel to the free border of the leaf. As it approaches either of the two openings, it is of course nearer to the middle branches. From the reticulum end, a vessel is often seen to arise, which likewise runs along the free margin of the leaf, giving off branches that are directed towards the wall of the psalter, and there anastomose with the other vessels.

In addition to this primary set of vessels, the trunks in the sub-mucosa furnish a second or smaller set which, however, soon breaks up, its branches anastomising in the leaves with branches from the primary set. In fact, through this extensive anastomosis a beautiful and regular capillary network is formed, situated directly beneath the epithelium. To each of the macroscopical papillæ a large branch is given off, which courses its way along the margin, giving off numerous smaller ones which unite to form a rich capillary network. The vessels in the microscopical papillæ are arranged sometimes in a loop, sometimes in meshes from which the small veins arise. The veins are similarly distributed to the arteries. They are situated superficially to the arteries, and are devoid of valves ; they may, therefore, be easily injected from the main trunks.

A very rich set of lymph-capillaries is found in the mucosa, lying deeper, however, than that derived from the blood-vessels. They extend into the large papillæ. The main trunks are found in the sub-mucosa.

As regards the nerves, their termination, etc., I have only been able to assure myself that they form in the leaves a network similar to that existing in the intestinal walls, and that ganglionic enlargements are by no means unfrequent. Their real termination I did not succeed in discovering. The finer branches are non-medullary in character. Plexuses were also found within the walls, but no ganglia. I observed, however, here and there, multipolar ganglion cells, which communicated with one another by means of their processes. The psalter, therefore, is provided with intramuscular nerve-centres of its own.

These anatomical facts are in accordance with the results obtained by means of physiological experiments. Irritation of the pneumogastric nerve in the neck was followed by strong contraction of all the stomachs, with the

exception of the psalter. They also responded to direct irritation, the psalter merely occasionally, and only on irritating particular places. The fact that whilst the other stomachs after death are relaxed, and the psalter in a state of contraction, further reveals the independence of the third stomach, and the presence of a centrum of its own.

III.—Physiology.

From the foregoing anatomical facts may be derived, with more or less certainty, a number of physiological conclusions. Before, however, passing on to reply to the questions which suggested themselves at the commencement of our inquiry, it may be as well to consider the condition under which the food arrives between the leaves, the manner in which it is moved onwards towards the succeeding stomach, etc. It is obvious that the most appropriate way for the food to arrive between the leaves is that of the œsophageal groove. Harms* and Lemoigne† have clearly demonstrated how the contents of the reticulum can raised into the œsophageal groove. That the reticulum, in conjunction with the musculature of the reticulum-psalter opening, is in a position to bring the food to the upper part of this opening, is equally certain. Arriving there, the only possible means of exit is by passing between the leaves, for the psalter canal has become almost wholly obliterated by the lifting up of the bridge. Into the interspaces the mass is guided by the warty processes existing in the opening, being at the same time, and by the same means, divided into several portions. Its reflux into the reticulum is prevented by the contraction of the œsophageal groove (Lemoigne).

The irritation produced by the food on the mucous membrane of the opening, causes by reflex action a *contraction of the leaves*. By this contraction they are rendered *tense, firm, and rigid*, and, at the same time are *brought forward* to *meet* the approaching mass. The latter movement is produced by the longitudinal fibres, whose fixed point is the muscular enlargement at the anterior end of the leaf; the former, by the action of the central muscular fibres, whose fixed point is at the origin of the leaves, and insertion in the muscular enlargement at the free border. Bearing in mind that the canal beneath the leaves is, by the uplifting of the bridge, almost closed, and that the laminæ are directed towards the reticulum opening, it is clear that the only possible course for the food to take is to pass into the primary chambers; the more so, as they are guided there by the warty elevations which have become, like the leaves, firm and hard. Directly the mass has reached the chambers, the longitudinal fibres are relaxed, and return to their former position, carrying the food with them. The latter is prevented from falling out of the chambers by the direction of the papillæ on the leaves, and by the approximation of enlargement on their free borders. Its maintenance between the leaves is further aided by mutual pressure, like the bricks of an arch. For these reasons no muscular exertion is necessary to retain the food in the interspaces.

The movement of the mass towards the abomasum is effected by the contraction of the muscular structure of both the wall and the leaves. *Each and every contraction of this stomach has, as a result, the pushing forward of the food towards the fourth stomach, because a movement in an anterior direction is, by virtue of the arrangement of the papillæ, rendered impossible.* Further, each narrowing of the psalter-space is accompanied by the raising upwards of the leaves, for their central muscular fibres are derived from the circular fibres of the wall. In this manner the food is passed from the lower to the

* *Zeitschrift für Thiermedicin und Vergleichende Pathologie*, 1876, 3 Band.
† *Recueil de Médecine Vétérinaire*, 1876, p. 481.

Fig. 1.

Fig. 2.

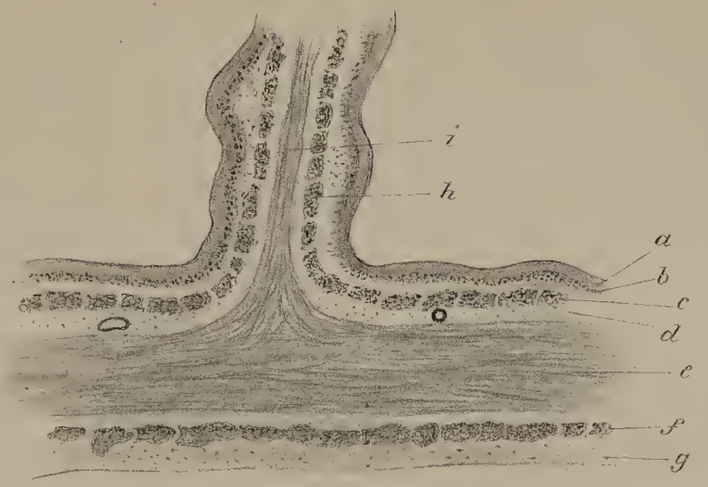

Fig. 3.

Fig. 4.

Fig. 6.

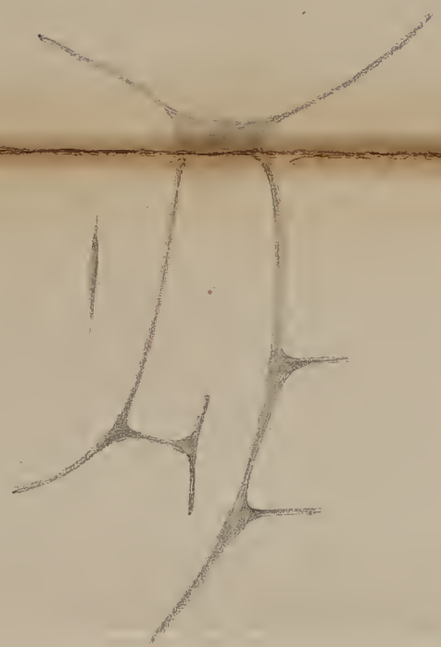

Fig. 5.

upper chambers—that is, from the primary to the secondary, tertiary, and quarternary ones. Everywhere, however, the passage in a posterior direction is fixed by the thousands of papillæ, which can only pass upwards and backwards.

Every movement of any kind, however produced, as well as pressure from without, conduces to this forward movement, just as pressure upon a vein supplied with valves, and every contraction of its walls, results in the passage of the blood towards the heart. The papillæ have the same function in this respect as the valves.

A still further aid is that derived from the constant passing in of new material from the reticulum, by which means a real *vis a tergo* results.

It is improbable that the muscular structure of the laminæ directly exercises any particular influence on this forward movement, for were this the case, the leaves must have their fixed point in the abomasum-opening. This, however, is not the case ; their fixed point is the muscular enlargement situated anteriorly, so that a movement of the leaves towards this point is directly opposed to the forward movement we have described. The emptying of the psalter is not, then, the function of the muscular tissue of the leaves. As it plays quite as small a part in maintaining the masses in the interspaces, may we not with justice ask, What is the function of this muscular apparatus? One function we have already learnt, namely, to bring the firm tense leaves towards the bolus as it enters the stomach ; and, secondly, to raise the food from the lower to the upper chambers. These functions do not, however, explain the great strength of the apparatus. We must, therefore, seek for a still further task which it has to perform, and this consists, according to my views, in the breaking up or pulverisation of those masses of the non-remasticated food which, in an insufficiently divided condition, have gained access to the stomach. This brings us, therefore, to the consideration of question number four.

(To be continued.)

Explanation of the Figures.

FIG. 1.—Schematic representation of the contents of the leaves or caked ingesta in the psalterium. The thick margin and papillæ are purposely well defined. The psalterium furrow or groove is shown at the under margin. The shading on the left is supposed to show one of the primary interspaces filled with food.

FIG. 2.—Section of the wall of the psalterium and the origin of a leaflet. *A*, horny layer ; *b*, soft cellular layer lying on the *propria mucosæ ; c*, muscularis mucosæ ; *d*, sub-mucosa ; *e*, circular muscular fibres ; *f*, longitudinal muscular fibres ; *g*, serosa ; *h*, lateral muscular fibres of the leaflets ; *i*, central muscular fibres of *ditto.*

FIG. 3.—Section of the termination of a leaflet. *A*, central muscular fibres ending in the muscle ridge ; *b*, concentration of the lateral muscular fibres to constitute the thickened border.

FIG. 4.—Longitudinal section of a leaflet, the epithelium of which has been removed in the process of digestion. Stained with hæmotoxylin. *A*, central muscular fibres ; *b*, lateral muscular fibres ; *c*, macroscopic papilla, one of a number ; *d*, microscopic papillæ projecting from the latter ; *e*, muscular fibres ; *f*, blood-vessels. The fixed and mobile connective-tissue cells are seen in the elastic network. The greater part of the connective tissue is transparent, through the action of acids, etc.

FIG. 5.—Longitudinal section of a leaflet, with blood-vessels and lymphatics. *A*, blood-vessels filled with Berlin blue. In each macroscopical papilla is a capillary network. *B*, lymphatic vessels, filled by puncture injection.

FIG. 6.—A portion of the nerve network of a leaflet, with a fibre showing spindle-form enlargement.

PUPILAGE.

THE *Lancet* for May 28th, in commenting on a letter on this subject, and adverse to pupilage, makes the following remarks, which are equally applicable to our profession :—" Our correspondent does scant justice here to the experienced practitioner. He is not likely to be so foolish as to undervalue the knowledge acquired through recent methods by a pupil at the hospital, and from a succession of such pupils, as a system of pupilage would imply, would be kept *au courant* with advancing science, besides having a clinical experience altogether different from that which a student has gone through in hospital work. Our correspondent admits that the dispensaries in educational centres afford ample opportunities for instructing young men in the practice of their profession. The subject of pupilage is coming up again, and though there never will be a reversion to pupilage in its old form, there is an extensive consensus of opinion in favour of a short pupilage at a more or less advanced period of medical study."

BRITISH NATIONAL VETERINARY CONGRESS.

WE are informed that the affairs of the Congress have been pushed forward, so that the arrangements have now become more definite. In the first place *it has been decided to fix the sittings for 20th, 21st, and (perhaps) 22nd July*, these days being more suitable than those originally suggested, which clashed with Cahirmee Fair and the Royal Agricultural Society's Show at Derby. The Committee has had the good fortune to secure the Lecture Theatre of the Society of Arts, John Street, Adelphi, which is admirably situated within a few minutes' walk from the Strand and Charing Cross station. Thus many of our country friends will doubtless find it convenient to combine business with such professional pleasures as the Congress will afford. Of the essays, the manuscripts of all are in the hands of the printer, or already issued from the press, and a copy of each is forwarded to each subscriber, and following the system adopted in the British and British Medical Associations, admission will be by ticket in the case of members and visitors. Thus it is evident that any of our readers desirous of participating in the Congress work, or even of sharing in this more for the advancement of professional interests without actually attending the sittings, should at once send his name and subscription to one of the local or central secretaries. The effects of this meeting of its members should be measured not only by immediate, but also by future benefits. Experience shows that such professional gatherings prove of great advantage by opening up fresh lines for veterinary influence upon the public, and by giving the authorities, civil and military, some insight into the present state of the veterinary profession.

The proceedings will be opened at ten a.m. by election of officers and an address from the chair ; also the reports of the design and progress of the Congress will be read and considered. Then the " major subjects " (soundness, influence of diseases of lower animals on the health of man, cruelty to animals, and legislation against contagious diseases of animals) will be discussed. The method of procedure which answered so well in Brussels last year has been adopted: each member having read the essays and made his notes, should be prepared to launch fluently into discussion as soon as the opener of the debate has resumed his seat. The time allowed to open the discussion will be about twenty minutes, and each subsequent speaker will be allowed ten minutes (to be prolonged at the discretion of the chairman), thus in the longest debate there will be time for at least ten speakers to express their sentiments, and some truth and valuable matter ought to be added to our present knowledge of the important subjects of

debate. It will be endeavoured at the close of each discussion to arrive at some definite conclusion to be submitted to the vote of the meeting.

An hour daily will be devoted to "minor subjects," of which some are announced; thus, for example, "The Congress protests against veterinary surgeons being called to serve on juries," "The Congress protests against meat inspectorships and other veterinary appointments being given to unqualified men, when members of the profession are available," and other such urgent professional views will here be submitted before a large representation of various influential societies, professional bodies, and to the members of the veterinary profession.

Finally, we would urge on our readers that, now they have an opportunity such as has not been afforded before, and may not for some time occur again, of benefiting their profession and themselves, and treating of some matters which can hardly be dealt with elsewhere, we trust the veterinary profession of Great Britain and Ireland (with the Colonies and India) will in this matter be true to itself.

THE FITZWYGRAM PRIZES.

THIS year there was only one competitor for these handsome prizes—Mr. W. W. Dollar, of London, who was awarded the First, value £50, having obtained 908 marks, one half of the maximum. The examiners were Mr. A. G. Rolls, of Arundel, and Mr. J. Fraser, of Newbury.

We must express our astonishment and regret that more interest is not manifested in the competition for these prizes, which are offered in a most commendable spirit. It is impossible for us to divine the reason for the want of zeal and absence of healthy competitive *esprit* among young graduates. In our early professional years, we fancy, had such tempting prizes been offered, a most extensive list of competitors would have been made up, and an exciting contest recorded.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD 31ST MAY, 1881.

The President, G. FLEMING, Esq., in the chair.

Present—General Sir Frederick Fitzwygram, Jas. Collins, P.V.S.A., Professors Pritchard, Robertson, and Axe; Messrs. Dray, Cox, Batt, Harpley, Coates, Greaves, Whittle, Taylor, Wood, Freeman, Anderton, Blakeway, Reynolds, Morgan, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Election of President.

Mr. DRAY said it was very gratifying to him to have the privilege and the opportunity of proposing Mr. Fleming as President for the ensuing year. With all due deference to the other members of the Council, he was of opinion that there should not be the slightest hesitation as to the selection that ought to be made. The late President (Mr. Fleming) had conducted the affairs of the Council and of the profession in such an admirable and efficient manner, that the Council would be deficient both in respect and gratitude if they did not seize the present occasion to show their appreciation of his indefatigable efforts in promoting the interests of the profession. To go into detail as to the duties Mr. Fleming had performed, the reforms he

had carried into effect, the other reforms which had been instigated by him and which were now in preparation, would be a work of supererogation. These were patent to all the members of the profession, and he thought they would all agree that no gentleman was so deserving of re-election as their worthy friend, Mr. Fleming. He therefore urged upon the Council to give a unanimous vote in the matter. He was quite aware that he had done but scant justice to Mr. Fleming's literary and linguistic talents. A gentleman with so many varied attainments was seldom met with ; and he hoped the profession would see that the Council estimated their President as they ought to do by re-electing him.

Mr. GREAVES said it had always been thought a just and proper custom that the provincial members should be represented by a president one year and the metropolitan members and professors in another year. Occasionally, however, this had been deviated from, as in the case of Sir Frederick Fitzwygram, when it was felt that it was essential to the interests of the Council and the profession that he should be re-elected. In the present instance they had in hand a matter of great importance, a Bill, which he was informed would be presented in the House of Lords that same evening, and it would require watching. Then there was also the question in regard to an Irish college, in regard to which the President had had interviews with Lord Spencer and Lord Aberdare ; therefore he thought they could not serve the profession better than by electing Mr. Fleming for another year. He had great pleasure in seconding the motion.

Mr. MORGAN said that notwithstanding the eloquent speech of Mr. Dray, he rose to advocate what he considered to be a matter of principle, namely, that no one ought to occupy the chair for more than one year. Mr. Turner had held it for a great many years, probably because he was the first President ; but after he left it it was always understood that no man would be elected twice unless under peculiar or extraordinary circumstances, which he did not think occurred in the present instance. He had as much admiration for Mr. Fleming as Mr. Dray had, but he objected to the principle of re-electing the same President year after year. He knew one or two gentlemen who had been disappointed in regard to this. He had great pleasure in proposing that his friend, Mr. Peter Taylor, be elected President of the College for the ensuing year. He had no doubt that Mr. Taylor would be able to attend to the duties, and Mr. Fleming would be able to assist him in every way he possibly could.

Mr. REYNOLDS said he had great pleasure in seconding Mr. Morgan's motion. No one appreciated more than he did Mr. Fleming's abilities, and what he had done for the profession. He (Mr. Reynolds) thought that the seconder of the motion had paid Mr. Fleming a poor compliment when he implied that he would not do so much good for the profession as if he occupied the chair. He (Mr. Reynolds) had not so low an estimate of the President's willingness to assist in everything relating to the profession, whether he was or was not President. He begged to second the nomination of Mr. Taylor.

Mr. TAYLOR asked for permission to withdraw his name, but the President ruled that this course would be out of order unless Mr. Taylor had another name to propose.

The ballot was then taken, with the following result :—

Mr. Fleming	10
Mr. Taylor	4

Mr. Fleming was then declared duly elected.

Mr. FLEMING thanked the Council very heartily for the honour that had been done him. He felt that every word Mr. Morgan had said was true in

regard to the holding of the chair for more than one year ; but he thought that sometimes there were circumstances when this principle ought to be abandoned. The re-election of President on former occasions was amply justified by the work done. There were tasks in which one man might succeed and in which two men might fail. With all due respect to Mr. Taylor, he might say that the work to be done in the ensuing year would have entailed his very frequent attendance in London, but if he had been elected, no one would assist Mr. Taylor more than he himself. He felt that the task for Mr. Taylor would have been very heavy indeed, but he was sure he would receive Mr. Taylor's support. The election had been fairly put and fairly won, and he trusted that the next year would see Mr. Taylor in the chair, when possibly there might be less work in hand. He thanked the Council for their support. There would be heavy demands on their time, purse, and travelling capabilities ; but they would submit to all these for the good of the profession. He himself would spare no pains in carrying out his duties, and to do is utmost in the ensuing year of office.

Election of Vice-Presidents.

Mr. DRAY called attention to the irregularity in the attendance at the meetings of the metropolitan Vice-Presidents, and thought that that fact ought to be taken into consideration in the election of Vice-Presidents.

The following gentlemen were then proposed as candidates, and received the votes as under :—

Mr. J. R. Cox	13
„ Woods	10
„ Wragg	9
„ Cartwright	9
„ Dun	9
„ Simpson	8
„ Santy	8
„ Simcocks	6
„ Cartledge	3
Prof. McCall	3
Mr. Dollar	3
„ Broad	2
„ Williams	1
„ Gerrard	1

There being a tie between Mr. Simpson and Mr. Santy, the ballot was again taken, when there voted for—

Mr. Simpson	13
„ Santy	5

Messrs. Cox, Woods, Wragg, Cartwright, Dun, and Simpson were therefore declared elected.

On the motion of Mr. Greaves, seconded by Mr. Whittle, Mr. Dray was unanimously re-elected Treasurer ; and on the motion of Mr. Dray, seconded by Mr. Taylor, Mr. Hill was re-elected Secretary, the proposers of both motions expressing their appreciation of the excellent manner in which both Treasurer and Secretary had performed their duties.

Mr. Dray and Mr. Hill in a few words returned thanks ; as also did Mr. Cox, on behalf of himself and colleagues, for their election as Vice-Presidents.

After a few explanatory remarks from the President as to the progress of the Veterinary Surgeons' Bill through Parliament, a vote of thanks was accorded to him on the motion of Mr. Dray, and the proceedings terminated.

THE SOUTHERN COUNTIES VETERINARY ASSOCIATION.

THE quarterly meeting of this Association was held at the Royal Kentish Hotel, on June 9th. Mr. G. Fleming, F.R.C.V.S., the President, occupied the chair, and there were also present Mr. J. B. Martin, of Rochester, the Secretary; Messrs. Thomas Greaves (Manchester), Henry Hogbin (Folkestone), R. A. Stock (Lewes), J. D. Barford (Southampton), C. F. Hogben (Dover), T. F. Hogben (Lyminge, Hythe), J. Gibbs (Bromley), Charles Rugg (Sittingbourne), Alfred Glover (Godstone), George Fordham (Willesborough), R. G. Barton (Tunbridge Wells), M. M. Rock (Chelsfield), William Cawthron, (Hadlow), Edward A. Cottingham (Redhill), F. Farrance (Eastbourne), Philip Rock (Chelsfield), T. P. Hounsell (Chertsey), W. Hunting (London) G. A. Banham (London), Captain Russell (Grantham), etc.

The SECRETARY having read the minutes, they were agreed to, and signed by the President. Mr. MARTIN then stated that he had received letters, regretting the inability of the writers to attend, from Mr. Cooper, of Dover, and others.

The PRESIDENT alluded to the benefits the Association would derive from the members exhibiting morbid specimens, and pointed out that this was one of the chief functions of such societies. He said: I think that this Association would be backward if it did not avail itself of the opportunity of affording to each of its members the privilege of exhibiting specimens of disease in different animals at these meetings. I have therefore taken the liberty of bringing before you, this afternoon, two specimens. There has been a great deal of discussion for a number of years as to the exact nature of what is called the Navicular Disease—whether it begins in the bursa which covers the posterior surface of the bone, or whether it commences in the interior of the bone itself. I have held to the view that the disease commences in the bursa. I have given my reasons at different times for this view, and the specimen which I present to-day will to a large extent, if not entirely, support that view. This is the navicular bone of a horse which was affected with fistula of the lateral cartilage. The fistula ran very deep, unfortunately, and the bursa was opened. This is the navicular bone. Now here was a case of inflammation of the bursa, and I contend that in the Navicular Disease the malady commences on the surface of the navicular bone which is in contact with the tendon, and not in the interior of the bone itself. The reasons I have given are these: that in the Navicular Disease, unless it is extremely advanced, we find the articular cartilage, healthy; we never find these two surfaces of the bone involved, but we always find this surface, that which is in contact with the tendon, implicated. This specimen is important, because it supports the views of those who contend that the disease does not begin in the interior, but on the surface. If it began in the interior, we should have the articular surface of the bone and the articular cartilage involved. When you have the whole tissue of the bone involved you have the articular surface; it is only in this very advantaged stage you have this surface diseased. The next specimen is a cystic calculus passed by a mare which belonged to the 4th Dragoon Guards. She had not exhibited any signs of having calculus in the bladder until on the march from Manchester to Aldershot. After being two or three days on the march, symptoms of Colic and severe straining set in, and the mare appeared to be in very great pain. On one occasion, while a trooper was in the stable, she passed this calculus. The mare is now alive. It is an extremely interesting specimen, because it is so surprising that the uretha of a mare could pass so large a substance. It appears to have been attached to the fundus of the bladder, and in that way was not of so much inconvenience as if free in the cavity of the viscus. Its surface is very rough. At both ends it is smooth—one end smoother than

the other, that by which it was attached to the fundus. At the other end it is flatter. I cannot find a case on record in which so large a calculus has been passed during life.

Mr. MARTIN: I can support the President's views concerning this navicular bone. I used to have, and have now, a great many of them. Prof. Spooner always taught us that the disease commenced in the centre, and he used to show it us by sawing the bone in halves. I have several specimens at home where the tendon is attached to this under-surface of the bone, and in which there is no disease whatever in the internal part. I think I have proved satisfactorily that the disease commences on the surface where the flexor tendon passes over. What is the cause? That is what we wish to arrive at. Whether it is a strain upon the tendon that passes over the navicular bone?

Mr. GREAVES: For a number of years I entertained the opinion that the Navicular Disease commenced in the interior of the bone—the interior of the navicular bone. I remember I read several papers on the subject, and I investigated it with great care. I felt convinced I was right. Since then certain cases have come before me that have made me waver in my opinion. I believe there are numbers of cases where it commences on the outside of the bone. I believe it may occasionally be found commencing at the outside, and occasionally commencing in the interior. I don't think that either case is always present, but I believe that in nearly every case it is constitutional. There is a hereditary predisposition to take the disease. Unless that exists you may work horses as hard as you like, either with thick heels or thin heels, and you cannot produce Navicular Disease; you may produce Laminitis. In reference to the calculus, I have not seen more than one or two cases that I can remember in my life. I remember when I was an apprentice a horse coming frequently to our place with intense abdominal pains. My master used to treat it for Colic. It was in intense suffering, and the perspiration over and over again ran down the horse from head to foot. I should think it came to our place about once a month for a twelvemonth. It died in the end. We found in the bladder a large calculus three times the size of that one. I think, though I am not able to say for certain, my master was not aware that that was the case. It is now forty-six or forty-seven years ago, and I cannot speak for certain that he was apprehensive of that calculus. The pain was more acute than in common Colic in horses. I know of no treatment that can be of any avail. I remember seeing Professor Spooner breaking down a calculus and removing it, but the horse died. I have never seen it attempted but once.

Mr. BARFORD: Mr. President, I should like to corroborate what you have advanced. I have made a very great number of *post-mortem* examinations, and I am perfectly convinced that this Navicular Disease commences in the synovial membrane. Where I have found caries in one instance, I have found inflammation of the synovial membrane in twenty or thirty. As regards that most interesting calculus, I consider the case altogether most unique. In the first place I never heard of or saw one that size having been passed without assistance. I think there cannot be a doubt it must have been attached to some part of the bladder; I am convinced in my own mind it never could have attained that very large size without producing very serious inconvenience. I can speak personally, having had myself to go through Lithotomy. I had a stone of some considerable size extracted from my bladder by the operation of Lithotomy, and it was, I am convinced, the movable character of that stone that caused me the inconvenience. In my case it formed a pouch for itself immediately between the neck of the bladder and the prostrate gland, which caused the operators most extreme difficulty. On three separate occasions they placed me under the influence of chloroform.

On neither occasion could they grasp the stone, from the circumstance that it got into this pouch and completely thwarted all their efforts. I was obliged to subject myself to Lithotomy, and with very great success.

Mr. GREAVES then read his paper on Pupilage and the Penal Act.

The PRESIDENT said they had heard the very elaborate, the very interesting, and very argumentative paper read by their friend Mr. Greaves, who had journeyed a long way to read it to them ; it was a paper which deserved their full consideration. It had been already discussed at several meetings elsewhere, and he was sure that the subjects to which allusion had been made in the paper were worthy of the deepest consideration. (Hear, hear.) It was the question of the day, the education of the veterinary surgeon, and he thought no subject could have been more fitly introduced at this meeting for discussion. He therefore asked them to discuss it in the most reasonable terms they could employ. Mr. Greaves had spoken as he felt, and he (the President) asked that the paper should be treated in the same way. Gentlemen should not be afraid to speak their minds, though in such a way that they should avoid creating dissension or illwill. They should remember they were united for one purpose—the promotion of their science. At the very foundation of this promotion lay the question of education ; therefore he trusted those who spoke would give it the importance it deserved, and do their friend Mr. Greaves the justice to believe that he had written that which he fully believed.

Mr. MARTIN said the Bill which was now before Parliament was one which was of the greatest importance to the profession, and they were deeply indebted to their friend Mr. Fleming for the pains he had taken in getting the Bill introduced with success so far. He thought Mr. Greaves, in his paper, had been rather too severe on the quack. He should hardly like to see it go before the public in such severe terms. Their object was not the total extinction of unqualified men. Of course, they now knew him as an impostor, assuming a title which he had no right to practise under. Mr. Greaves sought to utterly extinguish this man altogether. He didn't think the House of Commons would allow this. All they wanted was that this man should not assume their title, and not practise under a false name—let him call himself what he liked, and let the public employ him if they liked, but at present they had no means of discriminating between the qualified and unqualified men ; there were some unqualified men who did good work. The public seemed to be under the impression that the Association wished to deprive these men of getting a living, and were rather condemning them. He wished the public to understand that was not their object ; all they wanted was that these men should be known under their proper names. He hoped the veterinary surgeons of England would prove themselves worthy of the protection sought. It was a privilege which the medical and legal professions already enjoyed, and he thought the veterinary profession had a perfect right to protect themselves also. He should like the President on some future occasion—for he knew of no one more able—to write a paper on the subject of Rot in sheep, which had ruined so many hundreds of farmers. The President was a man with brains enough to enter into all the details and the natural history of the liver fluke, and also the *Filaria bronchiailis* in the lambs, which has of late killed so many. What the farmers desired was a preventive, as they knew it was not curable. It was most important that they should discuss such questions, and then it would go forth to the world that they were met together for the purpose of doing some good to agriculturists. By doing so they would show themselves worthy of the protection and privilege they desired. These meetings were useful in bringing the profession before the public. As regarded the Apprenticeship question, it had been so thoroughly dealt with by Mr. Greaves, who

had advanced all the reasons in favour of it, that he (the speaker) could only say that he fully approved of it, excepting so far that he believed the apprenticeship should be for three years instead of one. A young fellow going into college without a practical knowledge of the world, and then turned out to get a living in it, seemed to him to be perfectly absurd. Let him be shown canker in a horse's foot, of a case of parturition, and where would he be without experience? Mr. Fleming had taken a practical course in being instrumental in making it compulsory. He quite agreed with the Pupilage question. He should like to hear the President express his views on the whole matter. He might say with regard to his own district he held several appointments, and since the last restrictions issued by the Privy Council they had not had a single case of Pleuro-pneumonia, though it had hitherto been a hot-bed of disease. He mentioned this because a great many of the public, and particularly dealing men in the cattle trade, had frivolously called it all humbug.

Mr. HUNTING said: Mr. Greaves had treated in his paper two different subjects, but there was a very strong connection between them. He wished to point out how illogical that paper was. Mr. Greaves had made a lot of comparisons between the theoretical, so called, and the practical man, both of them utter chimeras, inasmuch as neither the classical nor practical man has ever been seen. His descriptions were what these men ought to be, or might be if they aimed at perfection. The practical man did everything well except speak the Queen's English, makes no mistake, will make the strictest diagnosis of every case, will know the exact *locale* of lameness when he sees it, and he obtained all this knowledge, how? By apprenticeship. Did they know a man who had never made a mistake? Was there never such a mistake made as to say a horse was lame in one leg, when the lameness was in the other? This was no uncommon occurrence, and there was legitimate room for difference of opinion as to where a horse was lame. Because a young man should make a mistake for once in his life in this way, was no real reason for believing that that man would make a similar mistake again. It seemed to him that the examiners had got it into their heads that a young man should turn out of the college just as good as an old practitioner. The thing was utterly impossible that a young man should turn out of college equally as good a man as one who had been there for twenty years. The illogicalness of the paper read by Mr. Greaves was this: he speaks evil of everything, of the professor, of the third session at college, and everything that tended to cultivate a man's mind, yet everything good was the apprenticeship and practice. If there was a practical man in the world, a man utterly free from this classical knowledge, it surely should be the quack and impostor—a man who had never seen that awful place, the college; a man turned out in the "clean-fingered groove." He would say that, logically, Mr. Greaves ought not to attempt the Penal Clause; he should support the quack and impostor. What was it he insisted upon? The quack and impostor had everything real that Mr. Greaves made out as great and good: the simple fact was this, Mr. Greaves, in attempting to prove his argument, had proved too much. Mr. Greaves had the advantage of time in which to prepare his paper, and he took one by storm by his rhetoric, he misled and caused them to form resolutions without thinking. No one wished to deny the value of practice. It was utterly impossible for a man to learn his profession from books or colleges alone; it was still more impossible for him to learn his profession without books or teachers. They would be in the position of their great-grandfathers, were it not for books and teachers, and they would arrive at the next stage in the next hundred years if Mr. Greaves had to do away with everything he spoke evil of. Professors were not simply men as they at that meeting were; they were men whose tastes suggested a professional

life, who had a tendency to follow scientific pursuits—men selected for ability to teach others, having the knowledge as well as the power to teach ; they were not simply veterinary surgeons picked up here and there. They were asked why practical men should not be good teachers ; it was because they had no more inclination that way than they had time, and as a rule no convenience. The simple differences between his views and those of his friend Mr. Greaves were these : You should teach a man to think before you teach him to act ; teach him the principles, or endeavour to teach him the principles, before he endeavours to learn the practice : before a man can do a thing he must think over what he is going to do; you should not commence an operation or diagnose the treatment of a case unless you think of it. There is no such thing as intuitive knowledge, you are just as likely to arrive at the wrong as the right conclusion ; if you are taught principles, and taught to think properly, then the probability is that you will act right. Now he would proceed to the books and literature to which Mr. Greaves had such a dislike. Lectures, teaching, reading, these were all nonsense, and he did not understand that books were of any value. Books were written by the best men of the profession as a rule, and a number of them contained all that was good and all that was worth remembering—the result of the experience not of one, but of hundreds. Reading a well-written book they got the ideas of the author, they got the result not of the man's experience only, but of every man's experience who had communicated anything on the subject. What he wished to say was this : that a student fresh from school, a boy fresh from school, when he was taught to think, should go on in the mental training he had had, and should take one session at college ; he would there be able to think and continue his course of thinking better than in any other way, and he might then, if he liked, make a break in it and go back to his parents or guardians. If he did that he would pick up just sufficient knowledge of anatomy, animal physiology, and chemistry to understand a good deal of what he saw, and he would also pick up that which was very important—just sufficient knowledge of the technical terms to be able to read well while at college and at practice, and to keep up and increase the little book-learning he gained at college. He might say for himself that when he left college he missed a session and went home. He had then an opportunity of seeing a great number of cases with his father ; for although he spoke against apprenticeship, he had an apprenticeship with his father. He never learnt more than he did in that intermediate period, because he made it a practice of looking up in every book he came across the cases which had come under his observation. He would say, then, that the proper thing to do was not to insist upon this apprenticeship before a man went to college, but let him go to college first and get his practical knowledge afterwards. As to the compulsory part of the Bill he had an objection to that, but it was merely an objection which every man might differ with. There there was plenty of room for difference of opinion. When they made a thing compulsory it was not of much more importance. He would say they had no right to make a thing compulsory unless they were perfectly sure they were legally right, and that they would obtain some end they would not otherwise obtain. In this case the Council had rushed in and passed a bye-law without knowing whether they had a legal right or not. They had had legal opinion, but they were going to get more, which showed that they did not know whether they were legally right or not. As to the moral right or expediency of it, if you make a thing compulsory you make it more distasteful. If any man goes through anything, if he is compelled to do it, he will do it and then stop. That was human nature. This would be the case when they compelled a man to go twelve months to a veterinary surgeon as an apprenticeship, just to get a certificate. Some men would take pupils just to suit their own convenience,

and not at all with the object of carrying out the huge transcendental notions of Mr. Greaves! If a man could not examine a student properly, that man had better resign his post. He could understand that a man who never taught could not examine. It was not at all difficult to test by examination a man's knowledge, and it certainly did not require that they should have fifty cases of parturition or any other thing which they could find in the index of pathology. This was simply utter nonsense that they should have something like 500 animals to operate upon before they could be considered fit to be sent from college. A man would not see two or three cases of everything mentioned by Mr. Greaves in the practice of any one single man in the kingdom; they might see perhaps forty of one thing, and perhaps fifty of another. His (the speaker's) argument was that they should not send a man for twelve months' pupilage to any one he liked to go to in order to get a certificate. To say that that would ensure getting a practical man, would be deceiving the public. This was no safeguard at all that a man should spend twelve months with any man who might happen to hold a diploma. It was utterly impossible and utterly wrong and unfair to expect that a man of twenty-two should know as much as a man of thirty or thirty-one.

Mr. MARTIN would like to understand Mr. Hunting's meaning. He would take two young men from school. They would have to be taught a little practical knowledge of the world as well as of the profession. Did he understand Mr. Hunting to mean that these young men should not have any practical knowledge before they went to college? Then Mr. Hunting objected to its being compulsory. If they had to compete against these unqualified men, he did not know of anything more detrimental than a want of practical knowledge. If they did not know how to take up a horse's foot or treat a quittor, he did not know of anything more detrimental or calculated to lower the profession in the eyes of the public than such a lad going into the world to gain his practical knowledge at the expense of the public. If it was necessary the student should have practical knowledge, then it ought to be made compulsory. Now that the Bill had been passed so far, it was rather important to them as a body that they should not relax their energies. When the Bill had got into the House of Commons they should still agitate—individually and collectively they could do a great deal. It was necessary they should show it was important that they were better men than the quacks who were ignorant of anatomy, physiology, and the materia medica; who were groping about in the dark, knowing nothing at all about principles, and making sometimes random cures upon speculative guesses. They should show Members of Parliament that they had knowledge of scientific principles, were better men, better capable of treating their animals than these ignorant pretenders; they should throw off all apathy, and he was pleased to see they were getting more zealous in the advancement of their profession.

Mr. BARFORD considered they had met together to discuss this subject in an impartial manner. At this present crisis there was nothing more important. They were about to apply to Parliament for a Penal Act to prevent those who had not obtained a diploma of the Royal College of Veterinary Surgeons, taking to themselves a title they have no right to. It behoved them as a body to look more and more to themselves. They were about to take a position they had never taken before in the eyes of the public, and the public would very naturally look to them for something in response to what they were applying for. He could not conceive anything more advantageous to the profession than to endeavour to send out young men who had obtained a diploma, who would be a credit to the profession they were so proud of. It was their work to show the public that they were really in advance of those who wished to use their title, if not their practice.

If by any means they could further the advancement they would be moving a step in the right direction. With all due respect to Mr. Hunting, he failed to find from Mr. Greaves' remarks that he for one moment depreciated scientific education. He was certainly of opinion that Mr. Greaves' remarks were totally to the contrary. In advancing the Apprenticeship Clause they did not for one moment—and he should disagree with them if they did—depreciate in any iota the advancement and the extreme value of that highly scientific education which was necessary to make an efficient veterinary surgeon. That had not been conveyed to his mind. He must confess that during the last fifteen or twenty years he had had many assistants immediately after receiving their diplomas who were no more fit to start in the world and get their own living as veterinary surgeons than if they had not been to college at all. He had had young men who had never bled a horse, who had never inserted a seton, who had never cast a horse, or performed any of the ordinary things expected of a veterinary surgeon. He was convinced that nothing made such an impression on the public as the way in which they proceeded with their ordinary work, the way in which they manipulated horses in every sense of the word. If a young man did not obtain practical knowledge (he cared not whether he went one session to a college first, and then into the country), and getting his diploma, went into the country with the expectation of obtaining a livelihood, he pitied him. It would be purely an exceptional case if he succeeded. He believed the bye-law was a step in the right direction. They had to acquire this knowledge from continued observation ; they had got all their diagnoses to make from observation, and he was satisfied it was only obtained by close observation. From what he knew of the curriculum and the teaching of the Camden Town College, a young man would utterly fail if he thought he was going to learn it there. He was very glad to find an attempt made at a practical examination, and he hoped that would be continued. And amongst all this he trusted that the teaching power of the colleges would go on with the extension of examinations. He was sorry to say at the present moment he did not think it quite up to the mark from all he could hear. He had had many young men with him these last few months, and it seemed to him to be a rather lamentable state of things, that the Principal of the College, a gentleman he highly esteemed, now over seventy years of age, was prostrated by a very serious illness ; that they had had the loss of Professor Pritchard, and Mr. Steel, a very excellent man ; and who had been brought as a substitute? He rejoiced to hear that they had got such a man as Mr. Robertson, for a more energetic and hard-working man there could not be. He ventured to say, therefore, that the teaching staff at our colleges was not commensurate. If they did not speak out on these occasions the Association would be worthless, and he could not help thinking that a memorial from this Association should go to the governors of colleges.

Captain RUSSELL had listened to the remarks made with very great pleasure, particularly those of the last speaker. His friend Mr. Hunting was perhaps a little too energetic in his language, and had said perhaps a little more than he intended to convey by his remarks as to the great importance of the Penal and Apprenticeship laws. Although he had no doubt in his own mind they made the quack too great a bugbear, he was to be lived down and conquered. He had found in his own experience they had their forefathers to thank for them. Had it not been for them, there would not now be a quack in existence, whereas at the present time in his own neighbourhood there were within a radius of thirteen miles no less than eleven. This was owing to the men before this generation spending their evenings in public-houses and refusing to attend to urgent cases. The result was, the quack grew up. If men would only stick to their work these would soon be

overcome. At the same time the public should know they had qualifications as veterinary surgeons. With reference to the educational test there could not be a doubt. He had been entrusted with the education of two or three pupils and assistants, and a few years ago he took an assistant who had passed with very great credit, taking a Spooner and silver medal, yet he did not know an abscess when he saw one, nor did he know how to open it. That was simply because he had not practice. Afterwards he became a very efficient assistant, and is now in practice for himself doing very well. This last year a qualified man came to him, but he knew nothing of practice, and one day he packed up his things and decamped. There was no doubt practice was essential.

The PRESIDENT said these subjects were of the highest importance to the profession at the present moment—the Veterinary Surgeons' Bill and the Pupilage Bye-law. They had both been before the profession for some time, and they had been, he thought, somewhat largely discussed; nevertheless, it was well that here, at the Southern Counties meeting, they should be still further discussed. The Veterinary Surgeons' Bill had become a fact, insomuch as it had successfully passed the second reading of the House of Lords. So far he had redeemed his promise to the profession, so far he had accomplished a portion of the work he undertook to perform, and which he trusted he should carry successfully to the end. (Cheers.) The reports as to what took place differed in the daily papers, and some of them were sadly inaccurate. They were very brief, and would not convey to the mind of the profession the real facts. What the Royal College demanded was the protection of its title. They simply said their Charter had given them a title, and therefore, after spending much time, much money, and much labour, they had a right to have that title protected—it was their trade-mark, it was the mark by which they were known to the public. Surgeons and solicitors were protected, and why not veterinary surgeons? That was the feeling throughout the country—it was the feeling of justice towards those men and the public. The Bill would perhaps meet with more opposition in the Lower House, but he was satisfied it would meet with as good a reception. There might be some alterations made in the clauses; perhaps the third clause was a little too restrictive. But whatever amendments were made, he was sure they would believe their interests and those of the public had not been sacrificed. The Bill was in good hands, in the hands of business men who understood well the position of all parties. They would find they had obtained all that was necessary to put them on a new footing in their relations to the public, and in a much more satisfactory condition with regard to their own future. With regard to the necessity for such a Bill, that had long been apparent. A feeling of hardship had been increasing every year. Whenever a student was rejected as an incompetent man he passed into practice and designated himself a Member of the Royal College of Veterinary Surgeons, and by these means imposed upon the public. They had no desire to injure any person's business or prospects; all they desired to do was to protect their own title. They had now the power of expulsion of members who did not behave themselves, but they had no hold upon the man who adopted their title; their professional reputation was at the mercy of such men. Many of these men were of the most degraded character, and the veterinary surgeons were simply asking a right. With regard to the question of pupilage, Mr. Hunting spoke strong, and he very often spoke wrong, especially when he said the bye-law was passed hurriedly. There he had made a very grave charge, and a very grave mistake. The subject had received attention; for a great many years it had been, to his knowledge, ever since these societies were founded. It had been discussed fairly, too, because he maintained if the

veterinary surgeon could not use his influence, if he could not put into practice his scientific knowledge to the advantage of his employer, then he was a disgrace to the profession. The mode in which this knowledge was to be acquired was, of course, the one which required most consideration. It was evident that the knowledge could not be acquired at any of the colleges. All would remember how they were taught, what their tuition had been, and the amount of practical knowledge acquired. So far as practice went it was absolutely deficient. The student studied the requisite period, and the number of cases he saw was very small. Rarely indeed was he allowed to put his hand to a case. What would they have thought of him if he had gone into practice immediately after getting his diploma? The best examiners in the world, unless given the advantage of examining fairly and well, could not test the practical knowledge of a student in the way desired. There was the student referred to by Captain Russell, who did not know an abscess, nor know how to open it. Perhaps he had never seen one during the whole period at college. This was a serious question. It was not a question for cavil, for personalities ; it was a question that affected the well-being of the profession, upon which their reputation and utility must hang. It was impossible for a student to acquire at college the knowledge of details which were so important to him in practice. How many men were taught to pick up a horse's foot, and pull off a shoe, and such little points of apparently minor detail within which the deficiency of knowledge is found out? He was of opinion this pupilage would be a great boon to the profession and the public. The question of time had been very wisely left open. As to the Bye-law there was no doubt in his own mind, or in that of the Royal College, of enforcing that power ; but if it should be decided by Counsel that the College has not the power to improve the condition of the people, then he would say that power should be obtained, and immediately. The Royal College was a body responsible for the position of the profession, for the proficiency and efficiency of its graduates, and if it failed in its duty it would deserve the severest rebuke that could be administered, and that would be the taking away of its Charter. The country was looking to it for most important services, and it would be to the interest of the profession to improve the teaching in every possible way. It was only through the College and its examinations that the improvements could be effected, and with all due respect to those people who rely absolutely upon the practical man, he would say this, that the veterinary surgeon must not only be a practical man, but a scientific practitioner—a man who understood science ; a man who was fully alive to what would best promote the interest of the public and the profession ; who adopts everything new and beneficial, and puts them into practice with an intelligent mind. What they wanted were men of brains. To produce such men must be the object of the Royal College ; to encourage such men should be the object of the profession. They might sometimes differ as to the way in which these improvements should be produced, but they should never differ as to their production. With regard to the teaching power of the colleges, he could not see how the profession could interfere in the economy of the schools. Although the teaching power might be deficient—he did not say it was so—nevertheless he could not see how the profession itself could approach the management of the schools. It was for the Royal College to say that the students who go up for examination should produce evidence of mental and physical ability, that the men are competent to be ushered into public life according to the value placed upon their diploma. He did not see that any memorial would be of any avail, and was afraid the governors would resent it as an interference. Mr. Greaves's paper had given them an opportunity of ventilating a very important subject which this society had undertaken to carry out, and they

should do it to the utmost of their power, not only for their individual benefit, but of the entire community. He was of opinion that the better they could educate a man, both professionally and generally, the better practitioner he became. Education was at the bottom of the profession, and the more they tried to raise it the better they would be appreciated by the public, and the higher they would stand in the public estimation.

Mr. GREAVES, in replying to the remarks which had been made by different members, said there was very little left for him to do, for every member who had spoken had agreed with him entirely. The only gentleman who differed was Mr. Hunting, and that gentleman had misunderstood him entirely. He imagined a youth should be taught modern knowledge, that he should read all the modern works of the profession, and be taught at college, and should not go into practice until he had obtained his diploma. In that they were agreed. The only point they differed in was the time for instilling the knowledge. Mr. Hunting had said let him go to school until he is of a certain age, then let him go to college. He (the speaker) said he should be taught to work amongst horses, and if he had not learnt all by the time he was twenty-one years of age, he would never get handy amongst horses in his life. They were agreed that youths should be well educated, that they should be practically taught, and that there should be a pupilage with a veterinary surgeon. He should be very glad if the question were put to the meeting and see how many hands would be held up for the practical teaching with pupilage or apprenticeship, and they would then have some idea what the southern gentlemen thought of it.

The PRESIDENT said it was very unusual to adopt such a course, but as Mr. Greaves was anxious to know how far his paper was in harmony with the opinion of those present, he would put the question to the vote. He then put the question, when all voted in favour of it.

Mr. HUNTING said he had voted in favour of the question, and there must be a logical mistake somewhere.

Mr. BANHAM said perhaps he could clear up the mystery. What Mr. Hunting disagreed with was the forcing of the pupil to serve under a practitioner. He (the speaker) could not see why objection should be taken to that simply because it was compulsory. If they went to school they were made to learn their lessons, not because they liked them; and they had to attend a certain number of lectures, not because they liked them.

The PRESIDENT said he had omitted to state that no one could find fault with the Royal College of Veterinary Surgeons for making it compulsory, for if they had left it voluntary they would be in exactly the same position as before. Everything must be compulsory. It had passed bye-laws which made its own actions compulsory; if everything was left to be done by the Council voluntarily, no work would be done.

Mr. HUNTING said that not a single student had lately left Camden Town College without having the opportunity of performing operations if required. Since Professor Robertson had been there, operations had been performed by the students. He knew men at the College last session whom he would back against many men who had been only twelve months with a practitioner. He still maintained that twelve months' pupilage ensured nothing.

Mr. BARFORD said it was new to him that students were allowed to operate at the Camden Town College. Nothing of the kind had ever been done before, and he rejoiced to hear it.

The PRESIDENT said he was an examiner himself. He did not care what school it was, they had no school in this country which could teach the student that amount of practical knowledge which he could acquire in the very first days of his practice. When he left college he went into practice, and

the very first night he was called out of bed to attend a case of parturition. Was there any school at which the student had an opportunity of studying obstetrics and handling animals, sheep, pigs, bullocks, and horses? There was a kind of practice in practice which was never seen at a college. They should look at things as they were, not as they should like them. Let the young man have a chance of acquiring a certain amount of practical knowledge, then they could with more safety give him a diploma.

Mr. HUNTING: Would a student be rejected simply because he knew nothing of parturition?

The PRESIDENT was of opinion he decidedly should. Before they concluded he wished to propose a cordial vote of thanks to Mr. Greaves for his paper. He was a gentleman well known throughout the profession as a most indefatigable traveller, a great enthusiast for professional advancement and for the professional weal, and the least they could do was to tender him a hearty vote of thanks.

Mr. BARFORD seconded. They were indebted to Mr. Greaves for the numberless ways in which he had advanced the interests of the profession.

The vote having been carried unanimously,

Mr. GREAVES suitably acknowledged the compliment paid him.

Mr. BANHAM desired to call the attention of the meeting to the proposed Congress, which had been adjourned from the 13th and 14th to the 20th and 21st July, because of the Royal Agricultural Show. They were getting on very favourably, and he believed they would have a very successful meeting. Mr. Martin had kindly undertaken the duties of secretary for this district, and would be pleased to receive subscriptions.

It was decided to hold the next meeting at Brighton in preference to Eastbourne, and the proceedings terminated.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE sixty-seventh quarterly meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening, May 13th, 1881; the President, C. W. Elam, Esq., in the chair.

The minutes of the previous meeting having been read and confirmed, the Secretary nominated Mr. D. Webster, of Ormskirk, and Mr. Reynolds and Mr. Bain, of Liverpool, as members of the Association.

Mr. R. C. EDWARDS communicated two cases: first, a case of Tympanitis, successfully treated by puncturing the intestines. He said: In this case the patient—a 'bus-horse, aged fourteen—was brought to my place on a Tuesday morning, showing symptoms of Colic. A subcutaneous injection of morphia was given with early relief. A dose of oil was also at the same time administered. During the remainder of the day the animal was free from pain. I, however, saw him again at twelve o'clock at night, when I found that the pain had returned, and finding also that the bowels distended, I gave him a dose of Ol. Lini and Spts. Terebinth. I then left him, leaving instructions with my assistant to call me at five in the morning if the patient still showed signs of pain. This, however, was not the case, but at eight o'clock I saw him again. The bowels were greatly distended, the pulse quick and small, and the respirations accelerated; the mouth was clammy, and the body was bedewed with cold perspirations. I then immediately determined to puncture, as advised by Mr. Faulkner. I punctured in the right iliac region. On the withdrawal of the trocar a large quantity of gas followed. After the operation the animal stood in one particular spot for two hours, and then commenced to nibble hay.

Although the animal was three weeks before he regained his proper appetite and was fit for work, still I deemed the case a success. No pain was

exhibited after the puncture, except on the third day, when a slight grunt was emitted when the animal was made to stand over. The skin wound healed by the first intention.

The second case is one of Traumatic Tetanus, successfully treated by Bromide of Potassium and Atropia.

The patient was a grey cart gelding, four years old, the property of a brewer in Chester. He had been pricked in the off fore-foot a week before, and had been treated by the shoeing-smith.

I first saw him at seven a.m. on the 11th of March, he having been unwell and stiff for a couple of days, and was becoming gradually worse. All the muscles were apparently in a state of severe spasm, the jaws had very little motion, and the body seemed to possess no joints. I shall not give you a daily account of the symptoms, but give you the treatment I adopted, and mention notable days, etc.

For the first four days I gave him ʒii. of Potass. Bromid. in a bucketful of thin boiled oatmeal gruel, also subcutaneously injected gr. ss. Atropia in solution. This was repeated every twelve hours.

On the fifth day the horse was grinding his teeth. Instead of the Potass. Bromid. I gave him ʒii. of Soda Carb. in his gruel in the morning, also injected the Atropia as before. In the evening the horse was much worse, the spasms greater. He had not eaten his mash, but had taken part of his gruel; repeated the Soda Carb. and Atropia. On the sixth day he became rather worse, could not move his jaws, had taken very little of his gruel, and not eaten any of his mash. I injected three-quarters of a grain of Atropia. In about two hours afterwards he went down, and remained so for six hours, when he commenced to struggle. I then gave him ʒii. of Chloral Hydrate subcutaneously, got several men to roll him on his belly, and brought his fore-legs forward as well as possible (two men to pull at and steady his head), when he got up at one jump. Shortly afterwards he drank a bucketful of warm gruel containing ʒii. of Potass. Bromid.: the grinding of his teeth had now ceased. In the morning he ate his mash and drank his gruel; gave the Potass. Bromid. and half gr. of Atropia as before. The next three days he got the same treatment, and the twelfth day from the first symptom being noticed. On this day the horse was considerably better; could eat and drink freely. We now gave him some long hay, also oats in his mashes.

The next three days he got every twelve hours Potass. Bromid. ʒi., and P. Nux Vomica ʒi. in his food, also half a grain of Atropia subcutaneously. On the following day, viz., the sixteenth of the disease, the horse commenced to purge, grind his teeth, and show symptoms of acidity. I then stopped his gruel and the Potass. Bromid. I gave him ʒii. of Soda Carb. in his food every twelve hours for three doses, continuing the Atropia as before, when the purging ceased. He was then put on dry food, with one bran mash in the evening, and water substituted for the gruel.

The next four days he got his usual doses of Atropia morning and evening, and in his food Ferri. Sulph. ʒi., Colchicum ʒi., Nux Vomica ʒss. twice a day. We have now arrived at the twenty-first day of the disease; the animal has been gradually improving since the twelfth day. I now ceased giving him the Atropia, he being able to eat off the floor; the future medicinal agents being mineral and vegetable tonics for twelve days, Cupri Sulph. apparently doing the most good.

On the thirty-third day of the disease I saw him, and he was doing well, the offending muscles being those of the extremities and the right retractor muscle of the eye.

On the fifty-second day I again saw him; he had not quite recovered; walking rather stilty, in other respects all right. On the fifty-seventh day he had quite recovered, and took out his first load.

On the seventh, sixteenth, and twenty-first days of the disease he went down and got up with assistance. On the twenty-fifth day he went down and got up without assistance.

The patient was kept in a darkened loose-box, and was noticed to keep his head in the darkest corner ; his shoes were removed, and sawdust used for bedding ; no clothing, although the weather was cold. The place of puncture for the subcutaneous injection of Chloral Hydrate produced a very troublesome abscess, but the places of puncture for Atropia produced no local effects.

In conclusion, I beg to state that I am not in a position to say that the successful issue of this case of Traumatic Tetanus is due to the administration of Potass. Bromid. or Atropia, or both ; but I can tell you this fact, that the animal has had a very bad attack of Tetanus, that he has recovered, and is now a useful horse.

The SECRETARY gave the history, with recovery, of a case of fracture of the Os suffraginis and Os coronæ.

A lively and interesting discussion followed each case, in which all present joined ; and a vote of thanks having been awarded to Mr. Edwards and the President, the meeting closed.

At the close of the meeting, the President announced that Prof. Axe would read a paper at the next meeting, which will be held on the 12th of August next.

WM. LEATHER, *Hon. Sec.*

NORTH QF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held at the Turk's Head Hotel, Greg Street, Newcastle-upon-Tyne, on Friday, May 27th, 1881. The President, Mr. W. J. Mulvey, Bishop Auckland, in the chair. Present, Professor Walley ; Messrs. Davey, D. Dudgeon, Sunderland ; M. Hedley, Darlington ; G. Farrow, junior, Durham ; W. Grieve, Blaydon-on-Tyne ; W. Wheatley, South Shields ; J. Gofton, North Shields ; A. Chivas, Corbridge-on-Tyne ; W. W. Stuart, C. Stephenson, A. Hunter, H. Hunter, W. Hunter, J. H. Wilson, and the Secretary, Newcastle-upon-Tyne.

Letters of apology were received from Professors W. Williams and W. Robertson, Messrs. T. Greaves, G. M. Mitchell, T. Foreman, W. Awde, H. Peele, W. T. Briggs, and R. Bulman.

The minutes of the previous meeting having been taken as read, the following gentlemen were unanimously elected members of the Association :— Messrs. J. H. Wilson, Newcastle-upon-Tyne ; H. Peele, West Hartlepool ; and W. T. Briggs, Darlington.

The following gentlemen were nominated for election at the next meeting :— Professor Walley, honorary associate, Messrs. C. S. Hunting, South Hetton ; and W. W. Smart, Newcastle-upon-Tyne ; as members.

The SECRETARY announced that he had received a letter and circular from Mr. Steel, one of the Central Secretaries of the British National Veterinary Congress, and on the fly-leaf of the circular that those only were eligible as members who were graduates of the R.C.V.S. He had written to Mr. Steel, saying that he should be most happy to do all he could for the movement, and asked him to send a subscription-book.

After an animated discussion as to the propriety of excluding veterinary surgeons not members of the R.C.V.S. as members of the Congress, most of the members present thought the ruling with regard to admission to the Congress a trifling one. If the members of the profession who only held the Highland Society's diploma were so little interested as to neglect taking the diploma of the R.C.V.S., on account of the payment of a guinea, they would hardly care to go to London and attend the Congress under any

circumstances. At the same time they would rather that the Congress had been on a broad basis.

Mr. GOFTON could only look upon the action of the originating committee in excluding men who hold the Highland and Agricultural Society's diploma as a very unwise and altogether unnecessary step, and calculated to introduce ill-feeling, and probably also damage the ultimate success of the Congress; and he moved "That this Association respectfully request the originating committee to re-consider their decision on this matter."

The CHAIRMAN remarked that if the Bill then before Parliament became law in the course of some little time, then the holders of the Highland Society's certificate would not be recognized veterinary surgeons; so that it would be stultifying themselves if the holders of such certificates were admitted to the Congress.

The motion was not seconded and the discussion dropped.

The PRESIDENT then delivered his inaugural address:—

Gentlemen,—On opening office as your President I must first tender you my thanks for the high honour you have conferred upon me. I should have preferred to have worked for the good of our Association in a more humble capacity; but as it is your wish that I should preside over your meetings for the ensuing twelve months, I must ask both for your forbearance and support, knowing and feeling as I do how difficult a task I have to perform in following in the footsteps of the many eminent men who have occupied the presidential chair of the North of England Veterinary Medical Association.

It is not my intention, gentlemen, to trouble you with any lengthy inaugural address, as our time will be more profitably and agreeably occupied in listening to Professor Walley; but there are two or three topics that are just now occupying the attention of the profession to which I should like briefly to refer. We live in stirring times, in the days of board-schools and competitive examinations, when every chimney-sweep's son has to pass an examination that in our early days would have been thought sufficient for a learned professor; so that it would ill become the veterinary profession to be standing still, and we cannot but be glad to find that the governing body of the Royal College of Veterinary Surgeons are to a certain extent alive to the requirements of the age, and that during the last few years they have made great additions both to the educational and professional examinations of the students. But one of the most recent acts of that august body has called forth a great deal of adverse criticism. I allude to the by-law which is to come into operation in the year 1884, which enacts that every student before presenting himself for the final examination shall serve at least twelve months' pupilage with a M.R.C.V.S. On this point there are great differences of opinion amongst the members of the profession, and I must enrol myself amongst those that are opposed to it. But first let us ask ourselves what has produced this enactment. It has been said, and justly said, that there are numbers of men who have passed the examining board of the R.C.V.S., and been granted the diploma of that body certifying that they are qualified to practise the art and science of veterinary medicine and surgery, who, when they have gone out into the world to practise their profession, have displayed such utter ignorance of the animals that they have to examine and treat, and of the ordinary every-day requirements of a veterinary surgeon, that they have not only brought the profession to which they belong into disrepute, but have themselves been disappointed at their own want of success. And so it is thought that twelve months' pupilage will do away with all this, and give to the student that amount of practical information which will enable him to practise the profession with credit to himself and benefit to his employers. But, gentlemen, I have grave doubts that this will not work, that it will be found to be a fallacy, that twelve months' compulsory pupilage

will not enable the R.C.V.S. to turn out any better men than heretofore. Well, then, you will say, how would you meet the difficulty which you admit exists? Gentlemen, no fresh bye-law was or is required. The examiners have the matter entirely in their own hands. Let the practical examination be of such a searching nature (and there are no difficulties in the way of carrying it out that I see) that they can with a clear conscience affix their names to the diploma, and certify that Mr. So-and-so is fitted to practise as a veterinary surgeon. And furthermore, gentlemen, if a student has attended the required course of lectures and dissections, and can satisfy the examiners of his proficiency both theoretically and practically, I cannot understand what business it is of any one's where he obtained his practical knowledge, so long as he proves to their satisfaction that he has it.

The next question to which I wish to direct your attention is the penal clause. It is proposed that an Act shall be introduced into Parliament making it a penal offence for any unqualified person to use the title of veterinary surgeon; and, in proof that our profession has made out their claim, the Government have adopted the Bill as their own. I believe the members of the profession are almost unanimous in their desire that this should be carried out—that the title they have by study and examination obtained should be theirs, and theirs alone; and although one of the most distinguished members of this Association, for whose opinion I have every respect, has both by his voice and pen done all in his power to oppose it, yet I believe he is almost in a minority of one. The principal reason he advances is that the profession is not yet fitted for it. This, gentlemen, I altogether deny. Is there a single profession or calling in which all its members are agreed in their opinions, or in which there are no black sheep? Not one, from the clergyman downwards; and certain I am that there are in the veterinary profession at the present time numbers of men whose scientific and professional attainments are of such a high order that they would be a credit to any profession. The charter of incorporation, which was obtained in the year 1843, distinctly states that the members of the said body corporate shall be exclusively and individually known and distinguished by the name and title of veterinary surgeons, but omits to inflict any penalty on any unqualified person using it, thus rendering the clause of no effect. For myself, I quite think that this omission was an oversight, and it is this oversight on the part of the framers of the original charter that the present Act is sought to remedy. If there was a convincing reason required why the penal clause should be obtained, I think a case in which my friend Mr. H. Peele was engaged, that came before the police-court at Hartlepool a few weeks since, would furnish that reason. A man called Richard Harvey, a quack, and of whom one of the justices remarked, "You might as well call a butcher," publicly stated that a diploma was not necessary for a veterinary surgeon, that he was duly and legally qualified to practise as a veterinary surgeon, etc. After a statement of that kind, made by a man who has no right whatever to the title, I cannot but think that even my friend Mr. Stephenson will acknowledge that there is some necessity for the title to be protected.

Before concluding I must remind you that a Congress of veterinary surgeons is proposed to be held in London, in July. This I hope and believe will mark a distinct era in our profession. It will tend more than anything has done in recent years to bring the profession and its claims before the public. It is decidedly a step in the right direction. I would express a hope that the meeting may be a successful one; that, once held, means may be taken to establish it as a permanent institution, to be held annually in some of the large towns in Great Britain or Ireland. I trust that every member of this Association will make a point of attending.

And now, gentlemen, in conclusion, if we wish well to the profession we have adopted, if we wish to see the members of it take that position which they have a right to amongst the educated men of the day, it must be by each one of us striving to promote its best interest by every means in our power. both publicly and privately—by so conducting ourselves in every capacity in life that the world shall be compelled to acknowledge that we are not only professional men, but, above all, gentlemen. Petty jealousies will occasionally arise amongst us in the great struggle to live, but we should strive to avoid anything and everything likely to give offence or hurt the feelings of a professional brother. It is at such meetings as this that we get to know one another more intimately, and ill feelings are replaced by respect and regard. (Applause.)

Professor WALLEY then delivered an exhaustive address on "Blood-clotting in the Heart, Arteries, and Veins ; Thrombism, and Embolism." He referred first to Thrombosis, pointing out that it might be either false or true. After showing the difference between the false and true, and explaining how a false thrombus led to a true one, he went on to show the predisposing causes of Thrombosis, which were numerous. Amongst these were Pulmonary Congestion, Lung Disease and consequent imperfect oxydation of the blood, and Brain Disease where the nervous functions were interfered with. Anything which tended to produce blood-clotting was a predisposing cause of Thrombosis. Other causes were the positions of the blood-vessels themselves with relation to gravity. The more pendulous a vessel was, the less support it obtained from the surrounding tissues, and the more likely it was to become subject to Thrombosis. Another great predisposing cause was weakening of the heart's action. The blood is thereby slowed, and is the more likely to become stagnant and clotted. The want of cardiac power was the great actual cause of Thrombosis.

The speaker then described in detail the origin and growth of Thrombosis in the veins, showing the process of formation as resulting from a number of causes.

He said the process of Embolism might be totally independent of the process of Thrombism, but, as a rule, it was due largely to Thrombosis in the first instance. He explained how this was, and gave a most interesting description of the formation of emboli, the places where they were usually located, their effects upon the animal, and the mode of treatment.

Professor Walley, in his illustrations of the subject, referred, first, to a case of general Thrombosis, liver, kidneys, etc., in a cow, due to absorption of uterine fluids after parturition, occurring in the practice of Mr. Fairbairn, of Alnwick ; second, exhibited specimens of Thrombosis of the superficial inguinal veins, in one case associated with Glanders, in the other with chronic Œdema and thickening of the sheath ; third, exhibited a specimen (forwarded by Mr. Summers, of Sidmouth), showing complete occlusion of the cœliac axis as result of Parasitic Thrombism ; fourth, a specimen of aorta and iliacs, with occlusion of one external and one internal iliac, occurring in the practice of Mr. Stanley, of Warwick ; with several other important specimens of Thrombosis in other vessels and in the heart.

At the close of his address the Professor was very heartily applauded, but discussion on the matter was adjourned until the next meeting of the Association.

A hearty vote of thanks was passed to Professor Walley and the Chairman, and the meeting ended.

Afterwards the company sat down to a sumptuous dinner in the hotel, the President in the chair. After the removal of the cloth, the customary loyal toasts were given and responded to. GEORGE ELPHICK, *Secretary.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held on 18th May, in the London Hotel, Edinburgh; Professor Baird occupying the chair, which he ultimately vacated in favour of Professor M'Fadyean, who, after ably discharging the duties of secretary and treasurer, has now been appointed president.

Mr. Young, East Calder, who had been elected secretary and treasurer at last meeting, being unavoidably absent, Mr. Cunningham, Slateford, acted as *interim* secretary.

The Royal College and the Apprenticeship Clause.

Mr. RUTHERFORD, who had a motion standing in his name on the above subject, begged to move it now, although he feared it was too late to be of much service. His motion was to the effect that the Association express their disapproval of the action of the Royal College in seeking to enforce an apprenticeship clause with regard to students presenting themselves for examination. He submitted that the only proper way of testing the sufficiency of a student's practical knowledge was by increasing the severity of the clinical examinations.

Mr. CUNNINGHAM seconded the motion, and corroborated Mr. Rutherford's statements from his own experience as an examiner in anatomy.

Professors BAIRD and M'FADYEAN having expressed concurrence, the motion was adopted.

The National Veterinary Congress.

Mr. RUTHERFORD moved that, in consequence of the action taken by the Central Committee of the British National Veterinary Congress of London in regard to members of the Highland and Agricultural Society who were practising as veterinary surgeons, they ought to withdraw from that Congress their promised support. Having alluded to the surprise occasioned by the action of the promoters of the Congress in endeavouring to make the Congress consist solely of members of the Royal College, all others being allowed to attend merely by invitation, Mr. Rutherford characterised it as a most illiberal proceeding, and one that cast an impertinent slur on gentlemen admitted to the profession by the gate of the Highland Society. Many of them held the double qualification of members of the Royal College in addition to their Highland Society membership, but considering the slur to which he had alluded, any holder of a Highland Society certificate would, by countenancing the Congress, be insulting a body which gave him the means of earning his bread.

Mr. REEKIE, V.S., Edinburgh, seconded the motion.

Professor BAIRD had supported the proposed Congress in the first instance, but considering the narrow-mindedness displayed, he was now disposed to regard it in quite a different light.

Professor M'FADYEAN thought undue importance had been given to this Congress. It was merely the conception of two or three juveniles who had exhibited an amount of prejudice and narrow-mindedness which was usually associated with ignorance. (Hear, hear.) The action of the promoters had, he believed, excited the indignation of professional men on both sides of the Border.

The motion was adopted.

The Proposed Bill to Protect the Title "V.S."

Professor BAIRD, in reference to the Bill which the Council of the Royal College contemplate getting introduced into Parliament, moved "That the members of this Association recognise the importance of the step taken by

the Council of the Royal College of Veterinary Surgeons to obtain protection for the title of V.S., and they pledge themselves to assist the Council in carrying out the measure by every means in their power."

Mr. RUTHERFORD had pleasure in seconding the motion, with an addendum to the effect that the term "veterinary" in business belonged exclusively to the veterinary surgeon, and that the prosecution should extend to farriers and all others who, by means of a veterinary forge or otherwise, sought to trench on the legitimate ground of the professional practitioner.

Mr. CUNNINGHAM supported this view, believing that they should at all events endeavour to get such a clause introduced.

The CHAIRMAN doubted whether they could claim a monopoly of the word "veterinary."

Principal WALLEY admitted that there might be a difficulty in appropriating a word accepted in different senses, but at all events he thought there could be no harm in making the attempt.

The motion was agreed to.

The late Mr. Waugh, V.S., Stirling.

On the motion of Principal WALLEY, seconded by Mr. CUNNINGHAM, it was resolved to transmit a vote of condolence to the widow of the late Mr. Waugh, Stirling, who, as a member of the Association, took a lively interest in all that concerned its welfare.

Interesting Cases.

Principal WALLEY submitted the following notes of cases presenting features worthy of attention :—

Universal Dermatitis with Scleroderma as the result of Parasitic Irritation in a Bull.—Subject, a two-years-old shorthorn bull, which, when the attention of Mr. Kettle, of Market Drayton, was directed to it, was found to be extremely stunted in growth, but otherwise healthy, the skin being covered (with the exception of some healthy areas of a few inches in extent) by oyster-like masses of epidermis from the tips of the ears to the feet. In the healthy areas myriads of lice were discovered, the epidermic proliferation progressing in a zonary manner, and gradually, as it were, depriving the parasites of their last refuge. Mr. Kettle advised immediate slaughter of the animal, which was carried out, Mr. Kettle kindly sending on the skin, a portion of which was now exhibited for inspection. The skin in parts was intensely inflamed and thickened, and the masses (in some places an inch to an inch and a half in thickness) of superimposed layers of epidermis, presented the characteristic appearance of molluscum keratoma or keloid, but were much less horny in texture than the latter.

Multiple Dermatoid Testicular Cysts in a Colt.—This was the testicle of a colt (monorchid) removed by Mr. Harrison, of Penrith. On examining the organ after removal, Mr. Harrison observed something peculiar about it, and cutting into it discovered its true character. Principal Walley, directing attention to this feature, said : You will observe numerous cysts, small in size, in its structure, two only contain hair—which is white in colour, rolled into coils, and mixed with sebaceous matter—the remainder containing a thick semi-transparent mucous-like fluid. At one point a distinct small mass of osseous matter exists. The specimen is, though not quite unique, a remarkable one.

Specimens of the "Tear Drop" or "Round" Worm from the Eye of the Horse (Filaria lachrymarum).—These worms, which are not often seen in Great Britain, are well known on the Continent. The specimens were forwarded by Mr. Summers, M.R.C.V.S., of Sidmouth, who states : "While I was examining the eyes of a horse suffering from rheumatic influenza, I discovered something moving on the surface of the conjunctiva, and on remov-

ing it with my finger at once detected its nature. Since this case occurred, I was asked to attend another horse suffering from Lymphangitis with considerable tumefaction of the eyelids, and on examining the conjunctiva discovered a number of the parasites in each eye, and at once removed them." The co-existence of these parasites with the swelled leg points to a probable cause of the latter, viz., the presence of filariæ in the lymphatic glands and vessels of the limb, as recently a case was recorded in one of the medical journals of a man who suffered from an enormously enlarged and thickened condition of the scrotum with effusion of lymph from the surface of the skin, microscopical examination demonstrating the presence of embryonic filariæ ; and on the subsequent removal of the scrotum with the knife, a mature worm was extracted from one of the lymphatics. The treatment of the "tear drop" worm is simple, and after their destruction the conjunctival inflammation quickly subsides.

Thrombosis of an Artery as the Result of Irritation by Parasites (*Strongylus armatus*).—Also forwarded by Mr. Summers, who obtained the specimen from the abdomen of a two-years-old colt which had died from the effects of an injury. The artery was the cœliac axis, and on opening the posterior aorta, Mr. Summers discovered other parasites in its interior. The points of interest in this case were (*a*) the complete occlusion of the artery, (*b*) the number of strongyles embedded in the clot, from the cut surface of which they protruded in every direction.

Mr. ALEX. GREY, jun., M.R.C.V.S., of Dick's Royal Veterinary College, read an interesting paper, which was illustrated by microscopical preparations.*

HIGHLAND AND AGRICULTURAL SOCIETY.

AT the meeting of this Society held at Edinburgh on June 15th, Professor MacFadyean, in moving that the Society petition against clause 3 of the Veterinary Surgeons Bill, stated that, in order to explain the full force of the clause, he would read it with the preamble. The preamble began by stating —"Whereas it is expedient that provision be made to enable persons requiring the aid of a veterinary surgeon for the cure or prevention of diseases in or injuries to horses and other animals, to distinguish between qualified and unqualified practitioners, be it therefore enacted," etc. Then clause 3 of the Bill ran thus—"On and after the first day of October, one thousand eight hundred and eighty-one, a person shall not be entitled to take or use the name or title of veterinary surgeon, or veterinary practitioner, or any other name, title, addition, or description, implying that he is a member of the Royal College of Veterinary Surgeons, or is otherwise qualified to practise, or is a practitioner of veterinary surgery, unless he is registered as a member of the said Royal College."

The Bill thus sought to obtain exclusive privileges for the members of the Royal College of Veterinary Surgeons. It declared by implication that those who practised on the strength of the certificate granted by this Society were in no sense qualified practitioners. That was surely a most anomalous thing, as the Royal College was not called into existence until twenty years after this Society had instituted its veterinary examinations. It might be supposed also that the graduates of this Society had received an inferior education and undergone an examination less rigorously conducted. That, however, was not the case ; and the period of study required by this Society had always been the period required by the Royal College. One sought in vain for any reason or explanation why the clause stood as it was. There was one thing he could conceive some one advancing as an apology for the clause in its present form. It was true that a few years ago an agreement was entered into between this Society and the Royal College, under which

* This will appear in the Journal for August.

graduates of the Society might be enrolled and registered as members of the Royal College of Veterinary Surgeons on immediate payment of a fee without any examination. But it seemed to him that that was a powerful argument against the clause, because by coming to that agreement the Royal College of Veterinary Surgeons accepted the degree of the Highland Society as sufficient proof of education equal to what it desired from its own graduates, and admitted that the holder was qualified for practising the veterinary art. But, further than that, the agreement was never intended to be anything else than permissive. By this measure it was sought to make it compulsory. It was true that a considerable number of graduates had thought it expedient to take advantage of that agreement, but a considerable number also—he thought a great number—maintained that no higher qualification was obtainable in this country than the veterinary certificate of this Society. They refused to be admitted to the Royal College by what some considered was a back-door entrance. If the Bill became law, it would be put into operation against those gentlemen, and should the Society not take any action on the matter these graduates would feel as if the Society had deserted them. The past history of the Society in its attitude towards the veterinary students had been one of unvaried beneficence, and to stand idly by and see this injustice done and indignity put upon its graduates, would be to a large extent to vitiate its own past conduct. He therefore begged to move—"That this meeting transmit a memorial, signed by its chairman, petitioning Parliament to amend the Veterinary Surgeons Bill, as follows—viz., to insert after clause 3 the words 'or holds the veterinary certificate of the Highland and Agricultural Society of Scotland.'"

Professor BALFOUR seconded the motion. He thought this another instance of the desire there was in England for the centralising of affairs in London, and said that if this proposal was to take away the position of those holding the degrees of the Society, they ought decidedly to set their faces against it.

The Hon. GEORGE WALDEGRAVE LESLIE asked who brought the Bill into Parliament—was it in connection with the Privy Council, or was it a matter of the Royal College only?

Mr. MENZIES stated that it was brought in by Lord Aberdare.

Sir GRAHAM MONTGOMERY suggested that the Society, in petitioning against the clause, should make Scotch members aware of the state of the case, and that the Secretary should get some member to put a notice on the paper to move the rejection of the clause when the Bill went into Committee, otherwise the Bill might slip through at some early hour in the morning, and they would lose the opportunity of getting the clause amended.

The motion was agreed to.

Army Veterinary Department.

WE have reason to believe that it is in contemplation by the military authorities, to give a step of honorary rank to deserving veterinary officers retiring from the service.

The annual dinner of the officers of the Army Veterinary Department took place at the Criterion Restaurant, London, on June 17th. There were present J. Collins, P.V.S. (who occupied the chair), T. P. Gudgin, G. Fleming, D. J. Hinge, J. J. Meyrick, G. A. Oliphant, W. B. Walters, J. Anderson, W. Burt, F. Walker, F. F. Marshall, C. Percivall, J. A. Rostron, E. T. Cheesman, J. C. Dwyer, F. C. Boulter, S. R. Sartin, S. L. Pallin, F. Garratt, H. Thomson, J. Matthews, J. P. Adams, F. F. Crawford, W. B. Spooner, J. Cooper, J. H. Steel, E. H. Kelly, E. E. Bennett, J. Gibbs (on half-pay).

Obituary.

WE have to record the death, on June 11th, at the age of seventy years, of Thomas George Webb, M.R.C.V.S., of Epping, Essex, late of Bishops Stortford, Herts. He graduated in 1850.

The demise is also reported of William Marno, M.R.C.V.S., Keith, Banffshire, a graduate of 1867, who appears to have met his death while driving on his round of visits, his body being found on the road. Disease of the heart is supposed to be the cause. A local paper makes the following remarks on his personal character :—"Mr. Marno came to Keith and began to practise as a veterinary surgeon in 1857, since which time he has made many friends, but never made an enemy. He was admired by all for his kindliness of heart and disposition. Any one in distress or trouble could appeal to him for help with the utmost confidence, as his sympathy always found expression in a thoroughly practical way. He helped many to tide over difficulties when times were hard, who on hearing of his untimely death have declared that they have lost a 'friend indeed, as to many he was the friend in need.' His hospitality was almost proverbial, and his uniform straightforwardness in doing business was such that he retained the entire confidence of all with whom he came in contact in this way."

Parliamentary Intelligence.

House of Lords, May 31st.

THE VETERINARY SURGEONS' BILL.—Lord ABERDARE moved the second reading of this Bill, and explained that its object was to prevent the assumption of the title by unqualified men, and to subject to a fine of £20 any persons practising as veterinary surgeons without becoming graduates of the Royal College of Veterinary Surgeons. The Bill, he observed, was for the protection alike of the veterinary profession, of animals, and of their owners. He spoke of the present position of the veterinary profession in these kingdoms, and of its claims to consideration. The Bill was not intended to interfere with persons who acted as farriers, or treated cattle without professing to be veterinary surgeons.

Earl SPENCER thought the principle of the Bill excellent, and would give it his cordial support. He considered it a very important measure, and that it was most desirable to improve the position of veterinary surgeons, as anything which would raise their *status* would have beneficial results for the public. He alluded to their value during the prevalence of contagious diseases among animals, and on other occasions. There were in many parts of the country a great deficiency of qualified veterinary surgeons, especially at a time when there were so many infectious diseases among cattle, and in his opinion such a measure would greatly benefit the farmer. He thought, however, some of the clauses were too restrictive, and required to be qualified or amended in Committee. If Lord Aberdare would consent to this, he would do all he could to support the Bill.

The Duke of MARLBOROUGH thought it would be a very sweeping enactment to say that no person should call himself a veterinary surgeon who had not been educated at the Royal College of Veterinary Surgeons of London. He could not understand why the students of the London college were alone to be protected, and the students of the Highland and Agricultural Society and other colleges omitted. He thought it would be necessary to make important amendments.

Lord ABERDARE explained that the certificate-holders of the Highland and Agricultural Society were eligible for registration as members of the veterinary profession, and quoted the special Charter of the Royal College of Veterinary Surgeons to that effect.

The Marquis of SALISBURY thought it would be going too far to rule that no one should call himself a veterinary surgeon without passing the Royal Veterinary College. There were the graduates of the Scottish Metropolitan Veterinary Medical Association, and the Gayfield Veterinary College to be considered. The Bill must be amended to meet these cases.

Lord ABERDARE intimated his desire to meet the views of Earl SPENCER.

The Bill was read a second time.

House of Lords, June 23rd.

VETERINARY SURGEONS' BILL.—On the motion of Lord ABERDARE, the House went into Committee on this Bill, the Earl of Redesdale in the chair.

Earl SPENCER said he had important amendments to move in the Bill. He would not move them now, but on the report after it had been printed.

The Bill passed through Committee.

House of Lords, June 28th.

THE VETERINARY SURGEONS' BILL.—The House went into Committee on this Bill—the Earl of REDESDALE in the Chair.

After Clause 5, the Earl of CAMPERDOWN proposed a new clause, to the effect that the Royal College of Veterinary Surgeons in Scotland should be compelled to hold examinations of all students in veterinary surgery at the colleges in that country.

Lord ABERDARE had no objection to the clause. The practice had been to hold these examinations under certain bye-laws, but they would, after the passing of this Bill, be compulsory under statute.

The clause was added to the Bill.

On Clause 14, the Marquis of SALISBURY proposed that the period of practice which should qualify a man to exercise the profession of veterinary surgeon without examination, should be reduced from five years to three years.

Lord ABERDARE said that the object of the Bill was to prevent persons from practising who were utterly unfitted to do so. Many suggestions had been made to him, and some persons thought that five or even ten years' practice should be required.

Earl SPENCER thought five years ought to be retained, though he had no great objection to the proposal of the noble marquis.

The amendment was then agreed to.

Lord ABERDARE proposed a new clause for the purpose of exempting all veterinary surgeons who had been placed on the register from serving on juries and other public offices, in the same manner as dentists were exempted. The noble lord contended that as the services of veterinary surgeons were urgently required, they should not be obliged to attend as jurors at the assizes and quarter sessions, or be called upon to serve on local boards and in other public departments.

The Lord CHANCELLOR said he was sorry to differ in opinion on this subject with his noble friend, but he hoped this amendment would be not agreed to. The number of exemptions led now to much inconvenience, as all those who had to attend the assizes and quarter sessions well knew. Besides, a judge had always the power to excuse any person from serving on the jury if it were shown that his services were required on an important matter. He greatly objected to all veterinary surgeons who were well qualified to serve as jurors being exempted by statute.

Lord DENMAN supported the amendment, on the ground that it was important to have the services of a veterinary surgeon the first moment he was sent for.

Lord ABERDARE said that in some counties it was the practice not to summon veterinary surgeons to serve on any jury, but in other counties they were required to serve. It would be only reasonable that the law and practice should be uniform.

The House divided—Contents	... ...	32
Non-contents	... ...	51
Majority	... ...	19

The clause was therefore rejected.

The other clauses, some verbally amended, were agreed to, and the House resumed.

Correspondence, etc.

THE ARMY VETERINARY SCHOOL.

DEAR SIR,—From what I have read concerning the Army Veterinary School in your Journal for April and May, I think it will have a tendency to encourage quackery. A little knowledge is dangerous with some people. Even without any teaching, we find farrier-majors, tramps, etc., calling themselves veterinary surgeons. I am sure the majority of men who attend the lectures given at the Army Veterinary School will have more confidence in themselves, and after leaving the service will, no doubt, injure civil veterinary surgeons. The men who employ them will have a better opinion of their ability, from their having attended lectures; while the superficial knowledge which they will possess, combined with an obscene yarn and a drink together, will be quite sufficient to gain the approbation of the better half of some veterinary surgeons' clients. I know of farrier-majors, etc., occupying situations that qualified veterinary surgeons of ability, who have sunk their capital in obtaining their diploma, would be glad to take. Even one of the greatest peers in this country employs a farrier-major to attend as a veterinary surgeon upon his valuable stud. I don't think it is any criterion to go by that those trained Army veterinary nurses won't injure the veterinary profession, because trained nurses of the human being don't interfere with the practice of a human surgeon. Veterinary surgeons are not on the same footing as human surgeons. If such were the case, there would be little fear of Army veterinary nurses annoying us. Any man can call himself a veterinary surgeon. Even if the Veterinary Surgeons' Bill passes, unqualified men are still at liberty to practise. If anything exists that will be of interest to a few veterinary surgeons, and likely to injure another class, I think it is the duty of the injured ones to try and protect themselves.

I am, dear sir, yours truly,

"VERAX."

DEAR SIR,—Will you kindly allow me a small space in your Journal to convey my best thanks to Messrs. Walters and Lawson for their kind interest in my last letter, and also for the pains taken to allay my fears regarding the Army Veterinary School?

I have no wish to engage in a paper war, which too often ends in personal recriminations. But I cannot pass the two letters penned by these gentlemen without comment on one or two of their remarks. I am bound to admit my stock of information on this subject has been added to by their kindness, but at the same time I am in no way convinced that this School is for good, and the many assurances I have received from gentlemen of our profession, both military and civil, confirms the opinion that my views are largely shared in by others.

Mr. Walters infers that farriers trained by two months' instruction will do us no more harm than trained nurses do human practitioners; but we must not forget that surgeons and physicians are protected by law in a very different way from what we are. It is almost impossible for an empiric to trespass far on their grounds, whilst we have no protection beyond that which superior ability gives us. But there is a curious discrepancy in this

part of Mr. Walters' letter, for on the one hand he declares the School cannot sufficiently educate a farrier to "compete or injure the regular practitioner," and following on this he says in outlying districts the farriers have to act as veterinary surgeons in the management "of sick and lame horses." Now if a farrier is first taught in the School, receives a certificate, takes the veterinary charge of a detachment of valuable Government cavalry horses, will he not feel himself competent when he leaves the army to set himself up as a respectable quack? Many men are known to me who have done so on much less qualification, but humanity alone demands us to set our faces against such proceedings. I quite agree with Mr. Lawson in thinking "a little knowledge is a dangerous thing," and if the two months' teaching the Army Veterinary School gives does not provide just that amount, my fears are groundless. Yours faithfully,

May 14th, 1881. WILLIAM PENHALE.

A VOICE FROM THE ARMY VETERINARY DEPARTMENT.

DEAR MR. EDITOR,—I hope you won't vote me a nuisance if I occasionally trouble you for space in your valuable Journal for a bit of a grumble, there being times when I feel compelled to give vent to my accumulated feelings of disgust.

Like your correspondent "Pferd," in the April Number, I, too, have been looking for results from that committee meeting, but so far I have looked in vain, and the conclusion I have arrived at is this, "that in many respects our department is an unfortunate one;" but I hope to outlive these bad times, and come in for a ripe cherry in the end.

As an example of what we have to submit to, take the subject of promotion in the junior ranks, and we find that a veterinary surgeon has to wait twelve years for his first step. Why twelve, I wonder? for in the Royal Artillery, where so many of us serve, lieutenants of ten years' service are being promoted to the rank of captain. Army medical officers, *on being commissioned*, rank as captains: *these have progressed; we have retrograded.* Now this has been a sore point with us ever since 1878, and yet there is no appearance of improvement, and why? Because we are not half the men for ourselves that we ought to be. If we don't let our wishes be known, how can they ever be acceded to? Why have the medical men got *all they* wanted? Simply because they asked for it, and knew how they must act as a united body in order to get it. Note what they have got by the Warrant of 1879:—

A surgeon on joining	... ...	£200 per annum.
„ after 5 years' service	...	250 „
„ „ 10 „ „	...	273 15 „

Promotion after 12 years' service, £1 per diem.

See also what the Naval medical men have got, only just the other day:—

	s.	d.		£	s.	d.	
A surgeon on entry ...	16	6	per diem, =	209	17	6	per annum.
„ after 4 years	13	6	„ =	246	7	6	„
„ „ 8 „	15	6	„ =	282	17	6	„

Promotion at 12 years, £1 1s. per diem.

I have just dotted down these items, in order to expose in a small way the vast difference there is between the illiberal terms of our Warrant, and the very liberal manner in which the medical officers of *both* services are treated; but I would advise a perusal of both medical Warrants by every one: they are published in the *Lancet*, which can be got from any doctor. If I dare make a suggestion to the authorities, I should say, Throw our one overboard, and draft a new one on the lines of either medical one.

I might also state that Army medical men can retire on a gratuity at ten, fifteen, and eighteen years' service; and Naval men at eight, twelve, and sixteen: this I consider a great boon. Can we, in the face of all this, sit by idle? I hope not; then let each bestir himself, and study how he can best do his little (or much, as the case may be) for the good of the department. I consider that "old Warrant" men under the rank of first class have the greatest grievance, inasmuch as they are not on even terms, as regards pay, with the youngest probationer until they have served ten years. This is not the manner in which men of other departments are treated by new Warrants, yet why should it be so with us? I will venture to predict that, before that excellent measure—thanks to you, Mr. Editor, for it—the Pupilage Clause shall have been long at work, we shall find the ranks very thin, unless the Treasury comes to the rescue.

Only the other day an officer told me he was about to send his son to the Veterinary College, with a view to his eventually joining the Army Veterinary Department; but the Pupilage Clause was just then passed, and so he gave up all idea of his original intention. I was very sorry to hear this, because we want more of that class of officer among us; but in it we have an instance of the effect of that long-looked-for clause *already*.*

It is really distressing to hear the wail of *every* member of the department whom one happens to meet. Some there are who have little private grievances, but all have one in common anent the Warrant of 1878. I was only yesterday reading the articles of it, referring to pay and retirement, to a member of the Medical Department, and he was simply surprised to learn how much of a gap there will be between his and my pay at twelve years' service, even supposing I am lucky enough to get first class then; but when I got to the retiring allowances he said he could not have believed it. "Why," he said, "I shall get £1 a day at twelve years' service, whereas *your best will only be sixteen shillings*, then at twenty years' service I can retire on £1 a day, while you may *only get nine shillings*." (See Article 20 of Warrant.) I saw it all too truly. It is certainly rather ambiguous to read in Article 18 that one has a *right* to retire at twenty years' service; but almost in the same breath to learn, from number 20, that if one does so *for one's own convenience*, the allowance will be *cut*, so to speak, so as *not to exceed* one half of the daily rate of pay. I should like to know how much less (than the half) could be sanctioned under this article. There is no hiding of the fact that our Warrant requires overhauling *very much*, and in saying so I know I am

* Some time ago an officer of the Indian Army called upon us, to consult with reference to his son, whom he wished to enter the profession with a view to joining the Army. The lad's education, we were informed, had been very much neglected, and the lad himself was a dull learner; he had never been among animals—in fact, had been at school all his life. The father confessed that as ours was the cheapest and easiest profession to enter, it was the one for his son; as it needed but little money or mental or physical training. He was startled when told that it was necessary to possess some ability to practise veterinary medicine, and that a candidate for the profession should not only know something of animals, but should also be able to manage and handle them, and for this purpose should receive a special training with a veterinary surgeon for some time, either before going to college or during his collegiate course, and that the Royal College had thought it necessary to enforce a period of pupilage. Finding more brains were needed than he imagined, also more time and money, before a diploma could be granted, and also that a somewhat severe examination had to be undergone for admission to the Army Veterinary Department, this officer resolved to try his son at something in which he was more likely to be successful, and at which less money and brains would be needed for initiation.

We require something better than men who are mentally or physically unfit for every occupation, or who will not undergo training, be they officers' or other people's sons.—Ed. *V. J.*

only echoing the sentiments of a great many (perhaps every) members of the department; and would they speak out, you should soon have proof to the full and to spare.

But I fancy I hear some one say, "Oh, the new Warrant is working splendidly! We have got an average of over eight young officers yearly since its promulgation, and can afford to reject fifty per cent. of the applicants." Yes, and was not the same said of its counterpart, the medical one of 1876? yet see what an utter failure it proved in the end. I say that £250 a year *is* very good, but out of some twenty-five or twenty-six, only five, I think, are enjoying it; the remainder are drawing rupees 377½ in this country (the Indian pay of twenty years ago), because the Indian Government hardly recognized the Warrant under which they joined; and when these gentlemen discover the *real* meaning of, "Every year a number of veterinary surgeons *not exceeding four shall be retained in the service*" (in 1888 seven must go, provided there are no deaths or retirements among the eleven who joined in 1878), I expect they would not advise their greatest enemies to join the department under such circumstances. It is *one* thing to be *allowed* to retire, receiving a gratuity, but quite another to be *compelled* to go.

Apologizing for having occupied so much of your valuable space with this erratic effusion, I remain, dear sir, yours truly,

15*th May*, 1881. ——— (*Late*) R.H.A.

AMPUTATION OF LAMBS' TAILS.

SIR,—In an appended note in the Journal for June, the opinion of the profession regarding the amputation of lambs' tails is elicited.

Living as I do in the midst of an extensive sheep district, I have ventured to give my opinion and answers to three queries in the paragraph on the subject of docking lambs. I may, however, mention that the operation is performed when the lambs are about five weeks old. At that age the tup lambs are castrated, and the ewe lambs docked. The docking is chiefly confined to sheep grazed on low lands, the breed of Leicester and half-bred sheep. Hill sheep, including the breeds of black-faced and Cheviot, are seldom docked. In answer to the three queries asked in the note, I beg to give the following:—

1st. The docking of lambs' tails is most advantageous, and indeed, in the artificial way in which sheep are kept and fed, absolutely necessary.

2nd. Cleanliness is maintained greatly by docking, and very much less danger from maggot is sustained.

3rd. I have myself operated on many hundred lambs, and never knew of any instance of maladies of the generative organs arising from docking. It is also my experience, as well as that of many practical sheep-farmers, that they do not arise from such a practice.

Balloan, Beauly, N.B., 13*th June*, 1881. ALEX. GUNN, V.S.

ROYAL VETERINARY COLLEGE STUDENTS.

SIR,—I have noticed an advertisement, which has frequently appeared in the *Veterinarian*, to this effect:—"List of Veterinary Surgeons; published for free distribution under the Provisions of the Royal Charter of Incorporation. A list of veterinary surgeons (Members of the Royal College of Veterinary Surgeons), former students of the Royal Veterinary College." There are many things that a man may do with perfect legality, but still which may be of questionable taste; and I think that the publication of this list is one of them. It appears to me that when any person has passed his examination and obtained the diploma of the Royal College of Veterinary Surgeons, it is a matter of no consequence to the public as to which institution he has received his instruction at, as these are all supposed to be on the

same level. I do not think I should be far wrong if I said that there are very few of the general public who can tell the difference between the Royal Veterinary College and the Royal College of Veterinary Surgeons. We will suppose a case of a young man commencing practice in a neighbourhood where he is not known, and where some of the public are in possession of the list before mentioned. The first thing they do is to look in this list, when, if he has not graduated at the Royal Veterinary College, his name will not appear, and this with some would be prejudicial to his interests. Besides, this list is for free distribution, whereas the register of the Royal College of Veterinary Surgeons is not. Let any person take the trouble to look through the register and he will find that some of the best men, and some of the most distinguished, have graduated at the Scotch colleges. Take, for instance, General Sir F. W. Fitzwygram, J. Collins, F. F. Collins, G. Fleming, F. Dun, Professors Williams, Robertson, and McCall, besides others too numerous to mention. It would be only fair that the Scotch colleges should circulate a free list, and let the public see that it is possible for a man to be highly distinguished and a first-class veterinary surgeon without their being able to find his name among the "former students of the Royal Veterinary College." I remain, yours faithfully, "NEMO."

CORRECTIONS.

At page 401, line 18, of the Journal for June, for "*examination*" substitute "*evacuation*."

At page	432,	line	5,	for "*Manwel*,"	read	"*Manuel*."
,,	,,		43,	,, "*Timmors*,"	,,	"*Timms*."
,,	,,		43,	,, "*Crowdan*,"	,,	"*Crowdace*."
,,	433		5,	,, "*Gennmell*,"	,,	"*Gemmell*."
,,	,,		26,	,, "*Jervis*,"	,,	"*Jeeves*."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Poyser, Carabineers, Sialkote, India; J. C. Berne, A.V.D., Ireland; T. H. Prior, Ireland; "R. H. A.," India; T. Walley, Edinburgh; J. Dowling Allman, London; J. Webb, Bishops Stortford; "Verax"; J. Cook, Liverpool; C. Cunningham, Slateford; G. Elphick, Newcastle-on-Tyne; W. Leather, Liverpool; A. Gunn, Balloan; W. Penhale, Barnstaple; D. Hutcheon, Cape of Good Hope; R. F. Frost, Rangoon; G. Rees, Ash-next-Sandwich; M. Hedley, Dublin; B. W. Kirk, Bakewell; W. H. Steel, A.V.D., Woolwich.

BOOKS AND PAMPHLETS: *A. Zundel*, Der Gesundheitszustand der Hausthiere in Elsass-Lothringen; *C. Siegen*, Dispositions réglant le Commerce des Animaux Domestiques, etc.; Hernie Inguinale Etranglée; Considerations Générales sur les Animaux et les Viandes de Boucherie; Appréciation des Viandes de Boucherie; H. Möller, Grundzuge der Arzneimittelwirkung; *W. Tappe*, Die Aetiologie und Histologie der Schafpocke.

JOURNALS, ETC.: *Œsterreich. Vierteljahr. für Wissenschaft. Veterinärkunde; La Presse Vétérinaire; Revue Vétérinaire; Recueil de Méd. Vétérinaire; Archives Vétérinaires; Journal de Méd. Vétérinaire et de Zootechnie; Der Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; Mark Lane Express; Lancet; American Veterinary Review; British Medical Journal; La Clinica Veterinaria; Live Stock Journal; Sanitary Journal; American Live Stock Journal; Medical Press and Circular; Annales de Méd. Vétérinaire; Agricultural Gazette; Edinburgh Medical and Surgical Journal; Farmer.*

NEWSPAPERS: *Banffshire Journal; Irish Sportsman; Freeman's Journal; Newcastle Daily Journal; Daily News; Lahore Civil and Military Gazette; Scotsman.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

AUGUST, 1881.

THE OPERATION OF CASTRATION, AS PERFORMED WITHOUT CASTING THE ANIMAL.

IF the risk of operation to the animal be minimized, as a rule it means increased risk to the operator. We, as veterinary surgeons, are at considerable disadvantage in any surgical operation, from the necessity there is to employ forcible restraint, in order to ensure the safety of ourselves and our patients; and however carefully the restraint may be applied, with some nervous beasts, and with others of resolute dispositions or which are rebellious under restraint, fractures of the spine, limbs, or muscles will occasionally occur, to the annoyance and loss of both owners and operators.

Bulls I have always been accustomed to castrate in a standing posture, and I fail to see the necessity for casting them; but with horses the case is different; and after seeing the operation repeatedly performed while the animal was standing, and also performing it myself, I have come to the conclusion that the innovation is of use only in particular cases, and for the following reasons: 1st, *The increased danger to the operator;* 2nd, The operator requires to be both resolute and expert to succeed—timidity would be fatal; 3rd, When the testicles are not well down in the scrotum, and the cremaster muscle acts powerfully, the operation cannot always be accomplished; 4thly, In some animals, even with the most expert and resolute of operators, it is impossible to perform the operation in this posture,

crouching alone, if persistent, being sufficient to baffle the operator.

On the other hand, it ought to be recognized by our profession as a practicable position when it is decided to operate on aged horses, especially if there be reason to suspect anchylosis of the spine, either partial or complete ; in colts when there is a known faulty condition of the bones—as in Fragilitis Ossium—or when a previous colt from the same dam or sire, or both, has injured himself by being cast; also in animals whose struggles when "roped" are such as to cause apprehension : these may be quieter with the modified restraint as used in the standing operation.

The first suggestion to perform the operation standing came from a Mr. Mathews, an American castrator ; but whether it originated with him or not I cannot say. He has been some years in this country, and is regularly engaged in operating on horses standing. He is a powerful, man and a resolute operator, although past middle life. He is successful in the majority of cases, I believe, but has failed in others. The preparation of his clams he keeps a secret, but he is willing to sell this secret at a given price, providing the purchaser binds himself not to divulge it. He does not object to any one seeing him operate ; and after witnessing the operation, I remarked that to keep the matter secret he should not allow people to see it, as we had already seen quite sufficient to enable us to perform his operation. He gave full and free permission to perform the operation, but warned us that if we failed, and then came back to purchase the secret, a much higher price would be demanded. On my suggesting to him that the operation was the same whether performed with the animal standing or recumbent, from a surgical point of view, he failed to perceive the identity. The *modus operandi* is as follows : the animal to be operated upon is placed against a wall on the off side, with another wall behind him at right angles ; or, in other words, the horse is backed into a corner with his body parallel with the wall on his off side, and pushed close up against the other with his tail (fig. 1).

A rope from a ring in a staple about two feet from the ground or higher, just in front of the off fore leg, is passed over his neck in the situation of the collar, and made fast to prevent his plung-

ing or rearing. A man stands at his head holding a twitch on the animal's nose, while another presses him against the wall and

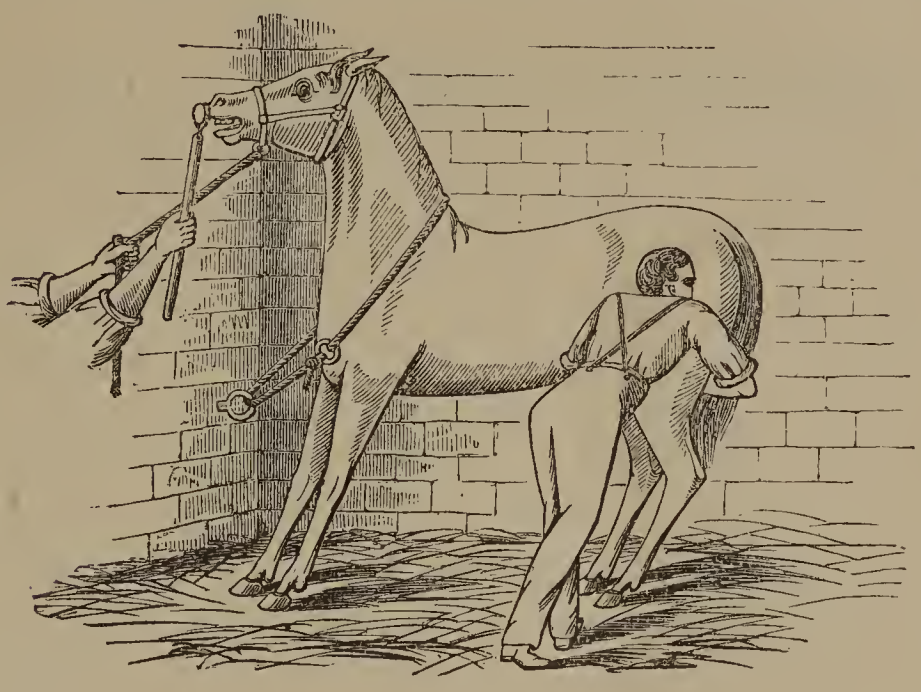

FIG. 1.

manages the shoulder rope. The operator stands on the near side, first stroking the quarter and then the inside of the thigh, until the animal is somewhat reconciled to being touched in the neighbourhood of the scrotum. Then the testicles are grasped by the left hand, or this is passed above the testicles, with the cords between the two middle fingers, and pressure is brought to bear downwards and backwards until the scrotum covering the testicles is tense; a knife, in shape like the Syme abscess-knife (but a trifle larger and stronger than that in general use), is plunged into the body of each testicle, and an incision made from before backwards, sufficiently large, with the pressure of the left hand and the half-divided state of the glands, to force them out of the scrotum. The rapidity with which these *two* cuts (one in each testicle) can be made by an experienced operator is such as to lead onlookers to exclaim, "Marvellous!" This I regard as the most difficult part of the operation, and any one becoming expert in making these two incisions will generally succeed, as directly they are made the animal arches his back, and shows unmistakable signs of feeling faint and little inclined to offer further resistance. The testicles are now hanging loose and half-divided outside the scrotum; a wooden clam (fig. 2) is then put on the right cord, the right hand of the

operator being passed round the back of the thigh with whatever there is to secure it. Mr. Matthews uses a leather ferrule, with the end of the clam tapering to receive it (fig. 3).

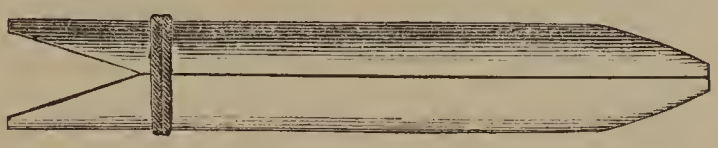

FIG. 2.

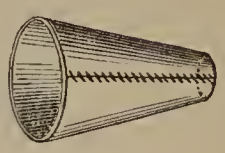

FIG. 3.

His caustic, instead of being a greasy ointment, presents a black, rough, and dry hard surface, somewhat like sand-paper. A good grip is required to bring the clam close enough; when the cord intervenes, to get on this ferrule; the left cord is then treated in the same manner. A blunt pointed clasp-knife removes the glands, and the operation is complete. Next day, of course, the clams are removed in the ordinary way, adhesions are broken down, and the divided ends of the cord are returned through the aperture into the scrotum. To prevent swelling, the horse should either be freely exercised at a walking pace, or put to slow work, care being taken not to allow him to get wet on the loins.

In castrating bulls in the standing position, the end stall of an ordinary cow-shed is selected, with the animal "*sealed*" * on the right-hand side of the stall, against the wall. A man, with a pair of "bull-dogs" in the nose, draws the head to the left side, and, if necessary, is assisted by another man at the horns; while either one or two others, as the case may require, press him against the wall. If only one, he should stand at the flank, and with the left knee half flexed and pushed under, he will prevent either the animal from lying down or crouching inconveniently. He should also hold the tail. If it is a large, powerful animal, and more help is thought necessary, place another man in a similar position at the chest, and give them a firm hold of a rope or rail secured to the wall over the back of the bull.

The operator stands at the back and somewhat to the left. For myself, I prefer the ligature in operating on the bovine species; although I see no reason why the other methods might not be used, if preferred.

* The fastening of a cow with the chain round the neck is called "sealing" in Lancashire and Yorkshire.

THE HORSE-SICKNESS OF SOUTH AFRICA.

BY D. HUTCHEON, M.R.C.V.S., COLONIAL VETERINARY SURGEON, CAPE COLONY, SOUTH AFRICA.

THE following crude description of a hurried investigation into the nature of the disease called "South African Horse-sickness" may have a little interest for some of the readers of the VETERINARY JOURNAL; and as I am not likely to see any more cases this season, I send you the description as far as it goes, imperfect though it be.

On my arrival at Bedford (S.A.) on the evening of April 25th, I was informed that a mare belonging to a native had died early that morning from Horse-sickness. It was then late, and the carcase was lying on the commonage at a considerable distance; nevertheless I determined upon making a *post-mortem* examination, being anxious to learn, if possible, something concerning the nature of this destructive malady. I made as careful an examination of the carcase as the circumstances would admit, and had the principal internal organs carried into Bedford for a more minute examination on the following morning.

The prominent pathological appearances were as follows:—

A great quantity of frothy mucus had escaped through the nostrils; the head and neck were slightly swollen, and the abdomen was tensely distended with gas. On removing the skin I found an effusion of a bright yellow gelatinous-looking substance into the cellular tissue of the inferior portion of the neck, extending throughout its whole extent, being in greatest quantity immediately surrounding the antero-inferior portion of the trachea and œsophagus. On opening the thorax it was found to contain a large quantity of a dark-coloured fluid, having a red tinge when held up to the light; the pericardium was distended with fluid of a similar character, while effused into the mediastinal space, and surrounding the heart, œsophagus, trachea, etc., was a great quantity of this bright yellow jelly substance; the lungs were considerably enlarged, and of a bright yellow colour on the surface. This colour was due to the effusion of this same jelly-looking substance under the subserous layer and into the interlobular tissue, especially around the borders of the lungs, giving

the edges a bright, glistening, translucent appearance when held up to the light.

On making a section of the lung it had a bright pink colour; the trachea and bronchial tubes were filled with frothy mucus to their minutest ramifications. On the removal of this mucus you could see minute petechial spots studded over the mucous surface, principally in the trachea and larger tubes. On squeezing the lung it emitted a sound like that from a stiff sponge when filled with soap-suds.

On opening the heart the blood in the right ventricle was quite black and perfectly fluid; the left ventricle contained a clot of yellow jelly, with a little dark fluid blood. On cutting open the large blood-vessels the blood flowed out, black and tarry-looking, with an entire absence of clots or moulds of the vessels. Studded over the surface of the endocardium were a number of small dark spots, being in greatest numbers on the *musculi papillares.*

On opening the abdominal cavity a quantity of fluid escaped, similar to that found in the thorax; the liver appeared of a slightly bluish slate colour and very friable; the spleen was normal in size, but black and pulpy when cut into; the kidneys appeared healthy, but in the pelvis there was a quantity of jelly-like mucus.

On opening the stomach I found a few small clots sticking to the cuticular portion, but it appeared otherwise healthy; the villous portion, on the other hand, was very much congested, and of a dark port wine colour; the epithelium was removed by the slightest touch, leaving the mucous membrane granular-looking and very much thickened; the rugæ were scarcely observable; the small intestines were similarly affected to about half their extent, and in the parts which did not present this congested appearance there was a thick coating of yellow jelly-looking mucus. There were several dark congested spots, varying in size, in the colon. I did not examine the brain.

On examining the blood under the microscope I found great numbers of the rod-like bodies termed bacteria, and taking this fact in connection with the other pathological appearances, I came to the conclusion that the disease from which the animal died was of the nature of Anthrax; but on making inquiry I

found that this mare had been ridden a long distance on the day previous to her death, which would have an influence on the character of the blood. I was anxious, therefore, to see another case before giving an opinion. Meantime I inoculated a goat with a small quantity of the blood, injecting it subcutaneously into the cellular tissue in front of the chest. The part commenced to swell almost immediately, the swelling extending along the inferior portion of the thorax and abdomen, and involving both shoulders. The goat died on the third day. There was no perceptible change in any of the internal organs, but on placing the blood under the microscope I could detect the characteristic germs, but only in the blood and tissues involved in the swelling, not in the general circulation.

I inoculated another goat from this one, this time in the tail, using only a small quantity. The swelling, as in the other case, commenced immediately, but I lanced it freely, which allowed the serous fluid to exude as it formed. This goat lived five days; but being obliged to leave the district the day it died, I had no time to make a minute examination of the blood. A few days previous to this, however, another horse died from the "Sickness." This horse had been regularly stabled during the night, but on Saturday evening, April 30th, he could not be found, and consequently remained out all night. On the Tuesday morning following he died. I was there in time just to see him die. In this case there was no escape of frothy mucus from the nostrils either before or after death; the tongue was swollen, and protruded from his mouth; the lips were also swollen, and exuded a yellow serum when lanced; the blood was dark-coloured as in the other case, but was not entirely devoid of clots; there was scarcely such a quantity of that yellow jelly effusion in the thoracic cavity as in the other case, but the small intestines were congested throughout their whole extent and a considerable portion of the colon; in all other respects the *post-mortem* appearances were similar to the one already described. On examining the blood under the microscope I could not detect bacteria in the blood generally, but I found them on the surface of the mucous membrane of the stomach and small intestines. I determined now upon inoculating a horse from this one; and as

there was a lame one running on the commonage, though otherwise healthy, I communicated with the owner and purchased the animal. I injected a small quantity of the general blood into the cellular tissue in front of the chest. The part inoculated commenced to swell next day. On the fifth day I opened the swelling, when a quantity of watery fœtid fluid escaped. I examined this fluid, and also the blood from the vessels of the part: both contained these rod-shaped bodies in abundance. The horse continued to feed, and appeared all right until the ninth day after being inoculated, when he became dull; temperature little altered. On the morning of the tenth day he refused his food; at 11 a.m. he lay down and manifested symptoms of abdominal pain, which continued until 5 p.m., when he died. As I was telegraphed for to go to another district on the following morning, I was obliged to make a *post-mortem* examination that night by candle-light on the veld (common). Dr. Rees, the district surgeon, and two other gentlemen, kindly consented to accompany me, in order to certify to the appearances exhibited. I may here remark that Dr. Rees took a great interest in the whole of these experiments, and agrees with me in my opinion of the disease that it is Anthrax. The pathological appearances in this case very closely resembled those seen in the others that died from the disease, especially the condition of the thoracic visceræ. The blood appeared almost normal, and formed a good firm clot; the stomach presented the same appearance as in the others; the congested condition did not extend to the intestines, but there was a great quantity of that gelatinous mucus extending throughout the greater portion of the small intestines. In addition, the liver was enormously enlarged, almost globular in form; the walls of its blood-vessels were ruptured, leaving only a distended trace of their presence; the liver substance was very granular in appearance and extremely friable; the colour was a little browner than natural. Glisson's capsule was ruptured over the quadrate lobe. I had not time next morning to make a microscopic examination of the blood and other fluids, and when I returned on the third day afterwards decomposition was too far advanced for any satisfactory examination to be made. I looked for, but could not

detect, bacteria of any kind in any of the tissues or fluids left.

Two other cases of death from this disease occurred within a few days of one another: one, a mare, died in the pound; the other, also a mare, died on the veld. In both the pathological lesions exhibited were essentially the same as in the first case, only that the spleen in each of them appeared normal both in size and appearance. Bacteria were found in the blood generally, but not in any of the organs of the body. There was one thing noticeable in these four cases: two were at rest during the attack —viz., the one in the pound, and the one that died in the stable— and from neither of these was there any escape of frothy mucus from the nostrils, either before or after death, although the trachea and bronchial tubes were quite as full as in the other cases; the other two were wandering about on the veld during the attack, and when I saw them a great quantity of frothy mucus was lying in front of their nostrils, partly dissolved.

Such is a hurried description of the disease called "South African Horse-sickness" as it has come under my own observation in this district. You are aware that the disease occurs in certain localities only; is most prevalent in summer or early autumn; is less prevalent in wet seasons, like what the present one has been; is never observed after one or two good frosts; and that animals which are kept constantly stabled at night are considered safe, also those removed to high ground. I am sorry that my description is so incomplete, but the cases occurred at a time when I was very busy investigating the nature of a contagious form of Pleuro-pneumonia in goats, in my opinion introduced into this colony by the importation of some Angora goats from Asia Minor, an account of which I will send as soon as I can find time.

ON A HORSE DISEASE IN INDIA KNOWN AS "SURRA," PROBABLY DUE TO A HÆMATOZOON.

BY G. EVANS, M.D., M.R.C.V.S., ARMY VETERINARY INSPECTOR, INDIA.

(Continued from page 10.*)*

Post-mortem of Camel No. $\frac{8}{79}$.—There was no abnormal amount of serum in the peritoneal cavity, and no layer of lymph such as I found in Surra horses. The organs were all perfectly healthy. Intestines opened and examined throughout, and found perfectly healthy. But in the right ventricle of the heart and in the pulmonary arteries I found tangled masses of filaria several inches long, which I suppose to be the mature form of the embryos I had found by means of the microscope. I have had no time yet to examine them in detail, neither has Dr. Lewis, to whom I have submitted specimens; but they are certainly thicker than the single specimen of the mature *Filaria sanguinis* which he found in man.

On the 9th October camel No. $\frac{61}{80}$ was destroyed (by bleeding, the same as the other), and *post-mortem* examination made. I found a large quantity of very clear serum effused both in the peritoneal cavity and in the pericardial sac, just as I found in Surra horses, but there was no fluff of lymph on the parietal peritoneum. The organs were all perfectly healthy. The Surra parasite lived longer, by several hours, in the blood of this camel after it was drawn from the body, than I found it doing in the blood of horses.

I was informed that the 4th Sikhs have lost the following numbers of camels during the past three years, and, with two or three exceptions, they are all supposed to have died from Surra:—

In 1878 there died 29 camels,
„ 1879 „ 41 „
„ 1880 „ 28 „

and there were ten on the sick list for it in October.

It is a subject for consideration whether many of the camels

which wasted away and died on our frontier, in the transport service, during the late war suffered from Surra.

Nawab Khan, the camel jemadar of the 3rd Punjab Infantry, has the reputation of knowing more about camels than anybody else in the district, and he communicated to me the following information, as interpreted by Major Money, 4th Punjab Cavalry :—

"The prevailing opinion among the natives in this district is, that Surra is caused by the bite of a large brown fly, the size of a small bee, called *Bhura Dhung*. In the month of May that fly comes from the ground in jungle land that has been under water. In June and July the flies are very numerous and in full force. About the 15th of August they begin to diminish, and early in October they are obtained with difficulty. The fly bites cattle and donkeys, but they suffer no ill effects; it bites men, and a painful swelling follows; it bites horses and camels, and gives them a fatal disease known by several names, such as *Khanhog*, *Doaia*, and *Surra*, depending upon the several stages. *Phipri* is another name by which it is known among camels. I know of no reason for saying that the fly causes the disease, except the common tradition of my people. The symptoms of the three stages of the disease in the camel are these :—First stage, *Khanhog*—Refusing food for one week. Sluggish, with the urine of high colour. Sometimes they get well from this stage, if treated early; but at this stage we cannot be sure that it is the beginning of Surra or some other disease. If the medicine does no good, they swell all over the chest, which is the second stage, called *Doaia*. The third stage, called *Surra*, is when the swelling increases and extends all over the abdomen and legs, when they rapidly waste, and their recovery is hopeless. If a camel ever recovers from Surra, he is useless for two years after. The urine usually remains high coloured during the hot season, and becomes natural in the cold weather. The urine is often very thick in Surra, because the flesh passes out of the body in that way. The duration of each stage is very various: in severe cases they die in a week, in milder cases they live two or four weeks, in still milder they live two or three months. They seldom live four months. The treatment adopted is the adminis-

tration of a bitter extract made by boiling the leaf of a tree called *Swah* or *Vunna*, growing in the hills. The extract is given mixed with butter."

I do not know whether dogs are affected with this disease naturally, but I succeeded in communicating it to them from a horse by inoculation (*vide* Appendix I.).

I took every opportunity of asking the zemindars at the outposts whether they knew of the disease among cattle and donkeys, and they all assured me in the negative. Colonel McLean, 1st Punjab Cavalry, however, was told by one zemindar that "cattle do suffer from it, and they get it in consequence of eating *Dhesla* grass, which grows upon inundated land, some part of which, either the root or other portion, contains a worm, or an insect of some kind, in June or July. The cattle eat it then, and it gives them the seeds of the disease, which does not break out before the cold season." I mention this to record that it was brought to my notice, and that I made special inquiries about it among the natives; but not one of them to whom I spoke had heard of it before.

CAUSES.—The causes may be divided into three classes, the Proximate, Remote, and Ultimate.

A. *Proximate Cause.*—It has been shown above that the disease is one of the blood, and not of any organic structure of the body; and that it is a specific blood disease has been proved by the experiments detailed in the Appendices D to I. When the diseased blood is introduced beneath the skin or into the stomach of a healthy animal, the blood of that animal becomes diseased likewise, and the same series of general constitutional disturbances appear in him as characterised the disease of the animal from whose vein the blood was taken. There is, therefore, some virus in the blood which, when it is transferred into a healthy animal, is as sure of growth and propagation as if we introduced seeds into the garden, or the roe of fish into a suitable stream—the like reproducing its like, and no other. Let us now examine the diseased blood, to find in what respect it differs from healthy blood, so far as the microscope can reveal. In the early stage of the disease the normal elements of the blood—the white and red corpuscles, and serum—appear healthy, and in a normal

proportion to each other; but there is a new element abnormal, and not hitherto found in any other disease. It is a living and exceedingly active parasite. There may be only one in the field of the microscope, or there may appear to be as many as there are of corpuscles. They are exceedingly small, having a diameter of about $\frac{1}{8}$ or $\frac{1}{10}$ that of a large corpuscle, and with the motion of an eel. I shall describe them more in detail presently. During the progress of the disease the parasite does not remain always in the same proportion: this varies with successive broods. The general symptoms are also variable. I am not able to prove that a definite relation exists between the variable number of the parasites present and the course of the symptoms, but I think it is probable. However, by-and-by, besides the presence of the parasite, the elements of the blood become abnormal. The first change is an increase in the number of white corpuscles. Sometimes $\frac{1}{3}$ or even $\frac{1}{2}$ the number of corpuscles in the field will be the white, and there is a remarkable increase in the number of the large granular white corpuscles. The next change probably will be in the red corpuscles, a large number of which will be like shapeless particles of pale-red jelly, from half the size of a normal corpuscle downwards. The last change observed will be a large number of small granular particles in the serum. I wish to note particularly that the first *apparent* change in the blood is the presence of these foreign bodies, the parasites; and that the other changes mentioned do not appear in some cases for several weeks afterwards; but with the advent of the parasites there is a very general constitutional disturbance: first, a lowering of the temperature; second, an abnormal elevation of it; third, Jaundice, with petechiæ on the mucous membranes; fourth, dropsical swellings, etc. The question suggested by these facts is, whether the presence of the parasite is the cause of the disease, or whether the disease is the cause of the appearance of the parasites. That they are most intimately related to each other is beyond reasonable dispute. There are some eminent pathologists in India who deny the parasitic origin of specific blood diseases: they say the cause of all such diseases, from Small-pox to Anthrax Fever, is not any organic spore, germ, or ova, or parasite of any kind, but some purely chemical agent which has never yet been

discovered ; and that these organisms develop at once in blood which has been so chemically altered, each chemical virus developing its specific organism, the spores or ova of which are *supposed* to be in the normal blood, ready to develop as soon as chemical changes favour them. The organisms themselves, even when developed, are supposed by them to be harmless. That is one of the most vexed questions of the present day in the pathological world, and it strikes hard at the root of the science and practice of sanitation. Against the above theory it is contended, *first,* that we should judge the unknown by the known ; this supposed specific disease virus is not known to chemistry, and there is no known pure chemical agent that acts in any way analogous to the specific virus of fevers, one dose of which, when taken into the stomach, gets into the blood, multiplies itself there a million-fold, and produces a constitutional disturbance lasting for weeks or months ; and a few drops of that living blood, after the lapse of many weeks since it was first chemically impregnated, if placed beneath the skin of a healthy animal, will, by chemical action alone, multiply and reproduce the same disease, and so on *ad infinitum.* In considering this subject we must bear in mind that the same blood does not remain long in the circulating vessels, but that it is in a constant state of renewal ; and, so far as we have any knowledge of pure chemical non-corrosive poisons, when only one dose is given it either precipitates and remains harmless, because there is too little of it, or else it is passed out with the effete blood, and leaves the system uninjured, or it rapidly causes death. *A small dose of pure chemical poison has never been known to multiply itself in the system faster than the excretive organs can get it out of the blood ;* nor has there been anything analogous to that performed by any ingeniously contrived apparatus at any chemical laboratory that I am aware of. *Secondly,* it is contended that specific self-propagation of like by like is the most characteristic feature of living organisms, as distinguished from purely non-vital chemical agents ; so that if we never found any foreign living organisms in the blood in specific disease, reasoning by analogy from the known to the unknown would lead us to believe that the disease was due to propagating living organisms present in the blood, though un-

seen. *And, thirdly,* it is contended that the microscope has enabled us to see such living organisms as are efficient causes in the blood to develop the diseases in question. In reply to this they say that organisms so like these as not to be distinguished by the microscope are found also in some healthy subjects, and appear to do no harm; therefore we should not conclude that the one is any more virulent than the other. The answer to that objection is this: We must not always judge by appearances, but rather by actions. There is an old saying, worthy of being remembered in our intercourse with men, that "the fool is considered wise until he speaks." It is not by vision, but by noticing results, that we first learn that one snake is poisonous, and another not very unlike it is harmless; that one berry is a deadly poison, and another berry very like it is wholesome. It is after we learn this that we notice the specific differences in the appearances of the snakes and the berries; but if the snakes and the berries were as small as some of the organisms we find in the blood, no microscope could enable us to see the slightest difference between the poisonous and the non-poisonous. We therefore must judge of them by their results or associations, and we do it in this manner:—We often find organisms A, B, and C in healthy animals, and therefore conclude they are harmless. But we also invariably find organisms undistinguishable in shape from A, B, and C present in the very first stage and throughout the course of diseases 1, 2, and 3—A always abundant in 1, never in 2 or 3; B always abundant in 2, never in 1 or 3; and C always abundant in 3, but never in 1 or 2. The blood of 1, 2, and 3, containing the organisms A, B, and C, if put under the skin or into the stomach of healthy animals, will invariably reproduce 1+A, 2+B, and 3+C, but no other associations. Again, if we destroy A, B, C, or remove them from the blood of 1, 2, 3 by filtration, and then inoculate healthy animals with the blood so treated, we shall either reproduce the disease in a very mild and modified form, or else not at all. A pure chemical virus would be in a state of solution, and would not be in the least affected by the filtration. From which results we conclude that the organisms A, B, and C are the cause of the diseases 1, 2, and 3, though from other observations we find that organisms

undistinguishable from A, B, and C in *appearance*, are harmless.

Those who believe that these organisms cause the diseases with which they are associated, do not agree as to how the cause operates. There are three theories given to explain. First, that they block up the smallest capillary blood-vessels, and so produce congestion and local inflammations, etc. Second, that they deteriorate the blood, by absorbing the oxygen necessary for the performance of the vital functions of the animal economy. Third, that they secrete from themselves something that is noxious, and which vitiates the blood; and while they are in the blood they reproduce this faster than the excretory organs of the patient can get rid of it. The first and second theories will not apply to the Surra parasite, which most probably operates according to the third theory.

(To be continued.)

ON BURSATTI.

BY R. W. BURKE, M.R.C.V.S., EDINBURGH.

(Concluded from page 24.)

"*Shape of the Cells.*—'It would appear,' says a writer on 'Epithelioma' of the human subject, 'that where the Epithelioma affects a mucous surface with cylindrical epithelium (as that of the intestine) the cells are of a cylindrical type rather than of the more usual squamous variety, and *vice versâ*.' This statement, however, is incorrect. I have detected *columnar* (*cylindrical*) cells in a Bursatti tumour from the *cutaneous* surface, which is clothed by the squamous variety of epithelium (fig. 6).

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

The shape the cells assume depends materially on the pressure to which they are subjected. Thus I have seen in the Bursatti sections spindle-shaped and elongated (fig. 7) cells, quadrangular (fig. 3) and oval (fig. 5) cells, and cells giving off one or more processes (figs. 6 and 9).

"The arrangement of the cells in concentric laminæ (figs. 2, 9, 10, and 11) is the most characteristic feature of the disease. It is these cells that assume spindle-shaped characters, and become converted into *fibres* and *bands* from the resulting outward pressure induced by the augmented endogenous growth occurring in the centrally entrapped (?) cells. Many of the cells show sub- or endo-cells (figs. 3, 6, and 8)."

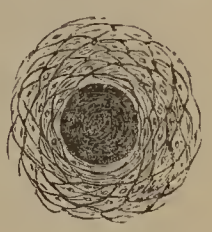

Fig. 10.

In conclusion, I would here offer a practical suggestion. Dr. Beale has so well expressed my own views on Cancer (Bursatti) that I cannot do better than quote him verbatim :—"The great difficulty of deciding as to the cancerous or non-cancerous nature of a tumour arises principally from the fact that no single element of which the structure is composed can be looked upon as characteristic of the cancerous form of growth only. Neither the character of the cells, nor the structure of the matrix, nor the arrangement of the elementary constituents can separately determine the point, and it is *only by carefully noting the collective appearances* observed upon microscopical examination that we can decide. In the great majority of cases, however, it is possible to speak with tolerable certainty ; but at the same time it must be borne in mind that instances come under notice from time to time, in which the most careful and experienced observers would be unable, *from a microscopical examination alone*, to decide positively as to the *nature* of the tumour" ("The Microscope in Medicine," by Dr. L. S. Beale).*

Many reasons surround the *history* (alike of Bursatti and Canker),wholly irrespective of the *microscopic view* which may be

* "I believe that the best histologists, when they contemplate the first textural beginnings of a cancer-growth in any affected organ, see only such simple signs of textural overgrowth as might equally be the beginnings of a non-infective tumour." . . . . "It seems that cancers have not, as was pretended, any one structure common to them." . . . . "On the whole, the anatomy of cancers is rather negative than positive in its bearings." (Dr. J. Simon, C.B., F.R.S., "On Cancer.")

taken of the nature of the diseases as being cancerous. The peculiar onset and insidious course of each, their malignant* tendency, the property they possess of secondarily involving internal organs, the peculiar pathological lesions they slowly induce, their liability to recur *in loco* when once they have been apparently eradicated, the total absence of pyrexia in the course of these two diseases, the absence of true suppurative changes in the lesions induced by them, the inoperative influence of the disease-products upon secondary "hosts," the characteristic cachexia of the later stages, the onslaught waxing equally severe on animals inordinately strong as on the thin and weakly, are corroborative evidences of the fact enunciated, that both these diseases are cancerous—evidences to which the most reluctant alienist must one day give adequate countenance.

Pathological Anatomy of Kunkur.

Histology—Mode of formation (definition)—Chemistry—Negative characters.

What is a kunkur? is an all-important question. I therefore wish to study this subject from four separate centres; viz.—1. The histology of kunkur. 2. The mode of its formation, or physiology of kunkur. 3. The chemistry of kunkur. 4. And the negative characteristics of kunkur. We shall then see that *a kunkur* is a substance worthy of the highest scientific attention.

For the sake of description I shall speak of it throughout as the embryonic (soft) and the mature (hard) kunkur, although, as we shall presently see, they are both but different stages of morbid change.

1. *Histology of Kunkur.*—I shall first describe (*a*) *what a kunkur is*, and then you will better understand (*b*) *what it is not.*

(*a*) This resolves itself into—

(1) *Histology proper of kunkur.*
(2) *Mode of formation of kunkur.*

(1) When a section of an *embryonic kunkur*, made with the

* Malignancy, note, does not necessarily mean the implication of neighbouring lymphatic glands. Often the lymphatics are free where the system is thoroughly charged with the disease-products. And in this I receive material corroboration by statistics drawn by "human" surgeons on Cancer.

main section, is placed under the miscroscope, it shows *sub* or *endo-kunkurs*, numbering two, three, or more, embedded in an immensely condensed hyaline or slightly fibrillated and granular matrix. On carefully working the fine adjustment, or causing pressure on the glass, each *sub* or *endo-kunkur* presents the exact characteristics of the *parent kunkur*, that is, it is seen to contain in its very centre cells which have undergone extreme compression, are degenerated and broken down, and around which are concentrically arranged spindle-shaped cells, some of which have been converted into fibres—all constituting a nest-like appearance. This is very roughly shown in fig. 11, the matrix being represented somewhat diagramatically.

Fig. 11.

(2) A kunkur may be defined to be *the ultimate result (product) of an augmented endogenous cell-growth in a part the seat of an applied stimulus of a peculiar degree.* And I venture to define this peculiar degree of stimulus as being of a nature something below that producing true inflammation, yet resistant and continued in its action. The stimulus in the case of Bursatti being afforded by the sting of a fly, similar to that afforded by a hot pipe and soot in the case of Cancer occurring in the human subject, or to that occasioned by pricks from nails and by dirt in the foot of the horse in the formation of Canker.

Some few cases of Bursatti, however, may arise independently of the irritation produced by flies, similarly as Cancer in the human patient arises *usually* (for Dr. B. Moseley has shown that Cancer

among the natives of the West Indies is due to the sting of a fly common to those islands) from irritation other than that of flies. Simple ulcers and weakly cicatrices, in this country (Britain), we know, sometimes assume cancerous characters. The same we know of Bursatti occurring in India.

In the production of Canker in the foot of the horse, traumatic lesions afford an easy channel for the conveyance of foreign matters to the deep structures of the foot, which undergoing putrefaction dissolve away the opposing structures by chemical action, and thus expose a yet wider surface for the exertion of irritant action consequent on renewed deposits of extraneous matter. And thus a process of continued irritation is surreptitiously maintained, which being the food of Cancer, the change peculiar to it thence receives its first impulse. Foreign matters lodged on once denuded raw surface continually "make head," so to speak, into still deeper structures, in virtue of the chemical action they set up by their own decomposition. As a preventive of the disease, the necessity of keeping the cleft of the frog clean and dry is also loudly called for.

So ardent a believer in the *local origin theory of Cancer* was Dr. Carpenter, that he almost succeeded, more than once, in experimentally inducing the disease on otherwise healthy epithelium of man.

"The real efficacy of soot as a cause of Cancer is, perhaps, best shown by the fact that persons who have been long in the habit of handling it are very liable to get Cancer in the hands; and the number of chimney-sweeps who become affected with this disease is vastly greater in proportion to their own body than that of other men" (Dr. Wm. Budd, "On the Causes of Cancer").

To resume the subject of histology of kunkur. From a markedly increased nucleated and granular appearance being presented by the cells, we have been led naturally to infer that there must be an augmentation in the multiplication of the cells endogenously going on to give rise to such an exaggerated appearance; which, thus far known, much of the remaining phenomena at work in the production of a kunkur becomes easy of calculation. Thus A is a field for demonstration; the spot B, a cell in its interior; any continued stimulus at work in B occasions

an outward expansion, and consequent pressure on the surrounding structures, C. The result is that the immediately adjacent structures around B are receiving, as it were, successively galloping compressions in their integral composition ; thus, as it were, becoming ultimately packed in successive laminæ around the part, radiating from the centre—completing the entire phase of a kunkur. This process going on simultaneously at different centres in a part, the result is that *weight* is brought to bear on the forces (peripheries) at each centre, which occasions a resultant compression in the interior of the growing centres, and produces subsequent breaking up (degeneration) of their constituents, the cellular elements. The nutrition of the part being thus "cut off" by the resultant pressure on the peripheries of each centre, the subsequent effect is fatty or caseous metamorphosis—constituting "soft kunkur"—of, followed by calcareous change—constituting "hard kunkur"—in, such centres.

But the force at play in the formation of *sub* or *endo-kunkurs* is wanting further elucidation. We have for our demonstration three cells, A, B, and C, enclosed within an applied stimulus. The course of the stimulus is perhaps (say) more concentrated towards C than towards its fellows A and B. There is, in a word, a greater augmentation in the endogenous development in C than in A and B. All three not working alike, the speed of C overtakes that of A and B, and the result is the production of fig. 3 and subsequently, by assimilation, of fig. 4.

I have now shown, diagramatically, the mode of development of a *parent kunkur*, and of *sub* or *endo-kunkurs ;* and there remains to be described the mode of endogenous development in each cell proper to Cancer (Bursatti and Canker).

Fig. 5 is a cell of which A is the cell-wall, B the nucleus, and C the nucleolus. The stimulus applied to the cell causes increase in bulk of C, which as it grows bursts B, and occasions *d* ; *d* receives a cell-wall, *e*, from condensation of the protoplasm (cell-content) D ; *d* in turn increases and ruptures *e*, and occasions *f*, and *f* in its turn 3. And thus 1, 2, and 3 are set simultaneously a-going, and the result is the production of that condition of the cell which is characteristic of Cancer.

To acquire an intimate knowledge of the nature of "kunkur,"

it is necessary that its section be examined in connection with the parent section. Those desirous of observing one will find a good engraving of it in Dr. Green's "Morbid Pathology," page 193, and several others of lesser interest on page 194. These represent but an incomplete stage of their development. It must be borne in mind, however, that we must not expect to find them here shown in the matured state to be seen in Cancer of the equine race. We recognise in the results of clinical experience an "ossific? (calcific) diathesis" peculiar to the equine tribe, which explains to us the ready and abundant deposition of calcareous matter taking place in newly-forming structures, etc. This accounts for the "human" surgeon being ignorant of the existence of such a thing as "kunkur" (as it occurs in the horse) in connection with the cancerous sores of his patient.

I have thus built up the entire "kunkur" from the first to its last stage, and so finished the consideration of heading (*a*).

Having shown *what a kunkur is*, it will now, therefore, be easier to explain *what it is not*. But before entering into this part of the subject, let us first inquire into the

3. *Chemistry of Kunkur.*—It is some years back now that Inspecting Veterinary Surgeon J. J. Meyrick, M.R.C.V.S., Superintendent of Studs in the Punjab, had first thought of investigating into its composition, and for this purpose had taken samples of it in large quantity from Mr. J. Burke, when in the late studs of Bengal. But the chemist to whom he submitted it was unable to give its exact composition, and since that time, so far as I know, no further successful endeavours have been made to identify the *true nature* of its component parts. Some time during sessions 1878-79 I submitted a quantity of "kunkur" to Mr. Shearer, of Edinburgh, for analysis, and he afforded me the following information :—

"1. A kunkur when heated on platinum foil fuses to almost an insignificant quantity of ash.

"2. It is calculated to contain about 90 per cent. of organic to about 10 per cent. of inorganic matter.

"3. The ash when tested shows the presence of phosphoric acid and lime (phosphates of lime)."

The carbonate of lime ($Ca\ CO_3$) that must also have formed

one of its constituents has, by heating on platinum foil, been split up into lime (Ca O) and carbonic acid (CO_2).

No other structure in the whole animal frame, save enamel, dentine, and bone, being found to contain more than, or as much as 10 per cent. of inorganic matter, we may safely assume that the kunkurs have become the seats of calcareous (inorganic) deposition. "This change reminds us of what takes place in the cacoplastic deposits in the coats of arteries and on serous membranes, constituting what is erroneously called *ossification*. The calcareous conversion of tubercles can be explained only on the supposition that the organic matter is absorbed, and the earthy salt is deposited in its place. This is exactly like what takes place in true petrifaction of organised bodies, the silica or calcareous substance being substituted molecule for molecule; so that, when all is converted into stone, the shape of the organised body is retained. And we further learn from this that the animal matter of tubercles may be absorbed" ("Principles of Medicine," by Dr. C. J. B. Williams).

(*b*). The negative characters of kunkur have been considered under heads of—Western, Hodgson, Phillips, and Meyrick, in the VETERINARY JOURNAL for October, 1880, to which the reader is referred.

THE *DISTOMA HEPATICUM* IN THE LUNGS OF CATTLE.

WE have carefully examined portions of lung-tissue obtained from cattle and containing "flukes," recently forwarded by Mr. Hedley, and we are now in a position to corroborate what he has described in the VETERINARY JOURNAL for June and July.

It would appear that the fluke in the "pupa" stage, having gained its *habitat* in the lung, sets up local irritation and inflammation, followed by exudation, suppuration, and the formation of cavities; whilst the neighbouring interstitial tissue becomes thickened, indurated, and finally calcareous salts are deposited in it, forming a hard, brittle wall to the cavity. The size of the cavity and the brittleness of its walls depend, as Mr. Hedley

says, upon the length of time it has existed. The cavities contain a thick, brown, gelatinous fluid, which, under the microscope, appears to be composed of the excretions and ova of the distoma, together with degenerated inflammatory products, and in all probability degenerated distomata.

Mr. Hedley asks how the parasites obtain access to the lungs. This is a difficult question to answer. It has been much debated how they gain access to the liver; and just as there are three possible channels for them to enter that gland, so there may be the same for them to penetrate to the lungs—viz., 1, by entering the hepatic duct to the liver, and the air-passage to the lungs; 2, by boring their way from the alimentary canal to the liver or the lungs; 3, by means of the circulation, or by two or all of these modes combined.

It is generally admitted at the present time that the fluke embryo gains admittance to the liver through the hepatic duct. If this circuitous course is accepted as the correct one, and that the creature does not bore its way through the tissues, then we can scarcely admit that it bores its way through to the lung. We must therefore find some more direct passage. This could occur in two ways—viz., 1, by the embryos being inhaled in a comparatively dry state, and when brought into contact with the warm moist mucous membrane regaining their full vigour and movements; 2, by adhering to the mucous lining of the fauces after being carried there with the food (this is not so likely to occur with the water, as it is swallowed too rapidly), and thence conveyed to the bronchial tubes and air-cells during inspiration, or by their own peculiar movements. The latter is not very probable, since the irritation they would occasion in the larynx would produce coughing, and consequently their expulsion. Again, whether during inspiration moist particles adhering to the walls of the passages can be carried along is extremely doubtful.

To what extent the embryos can resist the desiccating process does not appear to be definitely known. It seems highly probable, however, that there may be a condition in which they are sufficiently dry to be carried by a breeze, retain their vitality, and regain their activity when brought into contact with a moist

warm surface. If this latter is actually the case, we may then understand how it is that the lungs of cattle are more frequently attacked than the lungs of sheep. Cattle inhale air much more energetically than sheep, and this would consequently be more likely to carry small particles with it. Their air-passages, too, are larger, and therefore receive more air, and proportionately more embryos, and the latter would not be so likely to lodge against the walls of the air-passages. On the other hand, it may be said that sheep feed much closer to the ground, and therefore would be more likely to inhale the embryos. It is, however, a fact that the lungs of both animals are occasionally the *habitat* of the *Distoma Hepaticum*.

Few believe, at the present day, that the distomata gain admittance to the liver by boring through the alimentary canal, peritoneum, and capsule of the liver. If this were the case, some traces of their migration would necessarily be found; but it is not so. Nor is it thought that they bore their way through the walls of the intestine into the mesenteric vessels, and then into the liver.

The majority of observers consider that the fluke embryo gains access to the liver through the hepatic duct (see VETERINARY JOURNAL, vol. x., p. 250, where this is fairly argued out in a paper by Professor Friedberger, of the Munich Veterinary School), and not by piercing the walls of the alimentary canal, peritoneum, and capsule, to gain the liver. Farther on in the same article the reader will find that those who uphold this theory assert that the embryo may pierce the hepatic duct, and gain admission to the parenchyma of the liver, the peritoneal cavity, and even into the portal and hepatic veins. From the latter they may be carried by the blood current into the right heart, and thence into the lungs by the pulmonary artery, producing embolism and cysts. Surely there must be something illogical in these assertions. In the first place, their propounders do not admit that the fluke pierces the alimentary canal, but that they do so after they have gained the liver by the hepatic duct; then they bore their way into the vessels. We, however, do not see why, if the parasite bores at all, it may not bore its way into any tissue

(except, perhaps, bone and cartilage). But in answer to this, we are told, no traces of their passing through the walls of the intestine have been discovered, whereas they have been seen (?) piercing the walls of the vessels.

Leukart, who thinks they gain access to the lungs by means of the blood current, also believes that the distoma could gain access to the most distant parts of the body by means of both *venæ cavæ*,* and cause abscesses in such parts. Such peripheral abscesses, however, have, up to the present time, only been seen in the human subject. If we were quite certain that there were "fluke abscesses," the subject would appear to be settled; but we think more evidence is required before we can look upon the matter as finally disposed of.

Again, from the anatomical characters of the parasite, it does not appear to possess the power of boring through membranes, except, perhaps, immediately after leaving the egg-shell. At this stage it is said to be provided with a horny spine, which, by-the-bye, from the drawings we have seen, does not appear to be adapted for that purpose at all, but rather of holding on to the host, viz., molluscs, which are very soft creatures, and consequently require but little force on the part of the sporo-cyst to enter their bodies. If they do gain entrance to the blood-vessels at all—about which there seems to be little doubt—we are inclined to think they do so by the degenerative changes they occasion in the liver, and not by boring their way into them. If the theory be accepted of the liver being infested through the *hepatic duct*, we would suggest that the analogous theory of the lungs becoming affected through the *air-passages* be accepted, until more evidence can be given in favour of their gaining the pulmonary tissue by boring their way into the vessels, and being thence carried to the pulmonary arteries, etc.

If the "boring" theory be accepted, then it is difficult to explain why they are not found in other tissues than the lungs, and also why they are not more frequently met with in these organs. This, however, may be argued against to a certain extent, from the fact that the parasites, as a rule, have their

* If this be the case, they must travel against the blood flow in the post vena cava.

particular hosts, and peculiar locality in that host for their development, and that only under very exceptional circumstances —which we are not in a position to explain—do they deviate from this course.

THE EFFECTS OF LIGHTNING ON ANIMALS.

BY R. KNOWLES, M.R.C.V.S., WISBEACH.

As Mr. Banham has recently been the means of bringing before our notice some valuable information relative to the "Effects of Lightning on Animals," and as the amount of general information on this subject is so very scanty, I think the following particulars of two cases that have lately occurred in my practice might be of some interest to the readers of the VETERINARY JOURNAL.

On the evening of June 6th, I was sent for to see a valuable two-year-old thoroughbred colt that had suddenly been taken very ill. Being unable to go myself, I sent my assistant, who, on his arrival, found the animal to be affected with Tetanus. I saw the colt myself the next morning and gained the following information respecting him. He had been turned out in a field near the farm, and had been in perfect health up to twelve o'clock on the previous day, never having met with any accident or received any injury.

He was then observed standing with another colt under some trees during a violent thunderstorm, and he was not seen again till three o'clock in the afternoon, when it was noticed that there was something amiss with him, and on going to him the owner found that he was "stiff all over." I could discover no surface markings of any kind on the body; but from the history I had no doubt that the cause of the Tetanus was shock to the nervous system, produced by the lightning. He was in such a dreadful state that I advised the owner to have him destroyed.

As I was leaving the yard, my attention was drawn, by one of the men, to the fact that the other colt (also a thoroughbred two-year-old), with which the affected one had been, seemed very excited and was running about all over the strawyard; but I thought nothing of this, as I attributed the cause merely to the

separation from his companion. The next day the owner called to see me, and said that the second colt seemed all right in himself, but they had noticed two or three places about him which looked as if they had been singed. I heard nothing more of him till the morning of the 19th June, when a messenger came to say that the colt which was singed had been taken like the other one. I went off to see him at once, and on my arrival I found him to be affected, not with Tetanus, but with Paraplegia, and I came to the conclusion that this also was the effect of the storm, although a fortnight had elapsed since this took place. I gave the owner very little hopes of the animal's recovery, but I am glad to say that the case is yielding to time and treatment, and the animal is making very satisfactory progress. The principal treatment has consisted in the administration of strong doses of Nux Vomica combined with Ferri Sulph.

Editorial.

THE TITLE OF VETERINARY SURGEON AND THE VETERINARY SURGEONS' BILL.

SINCE the obtainment of the Charter of incorporation in 1844, the members of the Royal College of Veterinary Surgeons have indulged in the belief that the title of Veterinary Surgeon conferred upon them by the said Charter was exclusively their own. We, ourselves, have firmly entertained that opinion, and more than once have acted upon it; and that no one had any right to assume it, was the one reason why we have moved most energetically for several years in arousing the profession to obtain an Act of Parliament to make it a penal offence for any one to adopt it who was not a graduate of the Royal College. And this it was which impelled us last year to take active measures for procuring legislative interference, and to have a Bill drafted which would exclude all persons, save members of the profession, from designating themselves Veterinary Surgeons.

When that Bill, the progress of which we reported in last month's Journal, reached the Government, we were destined to a rude awakening from our dream, as those who were in the best position of all others to decide, asserted most emphatically that the exclusive right to the title did not belong to us. It was in vain we pointed out that it was introduced with the establishment of the first Veterinary School, and had always been our special designation, and that the Charter acknowledged this. The reply of the Government officials—and they were one and all anxious to favour the profession—was that a charter could not confer an exclusive right to the title, inasmuch as it could not prevent or punish

any one adopting it—for this an Act of Parliament is necessary; that though non-qualified men had assumed the title previous to 1844, no steps were taken by the Royal College in that year, nor since, to deprive them of it or restrain others; and that therefore men who had assumed the title of Veterinary Surgeon could not be punished for doing so, as there was no law to punish them; while it would be most unjust and cruel to deprive them of a designation which it was consequently decided was not illegal to adopt.

Added to this decision was the action of the unqualified men all over the country, who, on learning the purport of the Bill introduced into the House of Lords by Lord Aberdare, took immediate steps to protect themselves from injury. Then came the Highland and Agricultural Society of Scotland, which, after all the concessions made by the Royal College, and after rescuing it from a painful, if not a ludicrous position, opposed the Bill on behalf of its certificate-holders (as will be seen from the reports in last and this month's Journal), and would doubtless gladly have had it thrown out altogether, did it possess the power. Thus we had, on the one hand, the unqualified men and the Highland Society pitted against the profession, very many of whose members had been holders of the Society's certificate and whom it thus opposed; and, on the other hand, the legal advisers of the Privy Council, who were confident that Parliament would and could never pass the Bill as presented by Lord Aberdare. The Lord President of the Privy Council, than whom the veterinary profession in these kingdoms never had a better friend, or one more anxious to rescue it from its present degraded position, then undertook to amend the Bill in such a way as to give us all the privileges possible without compromising its safety in passing through both Houses of Parliament. The profession will possibly never know the amount of anxiety, consideration, and trouble the amended Bill required. The exclusive right to the title of Veterinary Surgeon we could not legally or morally claim; for though we are not aware what the promoters of the Charter of 1844 really expected when it was obtained, it is certain that when the ever-to-be-lamented disruption took place with the Edinburgh Veterinary School soon after, the profession was paralysed, so far as protecting its members was concerned; as the Highland Society would most undoubtedly have opposed, as it has now in conjunction with the pretenders opposed, any attempt to make the title the exclusive property of the Royal College graduates. Thus the Society became indirectly the protector of the impostors, and under its ægis these have flourished, multiplied wondrously, and waxed strong. This fact we commend to the reflecting faculties of those who are never tired of praising the Society for what it has done for veterinary science in these kingdoms, and who roundly and soundly abuse those who venture to doubt whether, after all, the Society's wholesale interference in veterinary affairs has been an unmixed blessing, especially of late years.

Earl Spencer succeeded in carrying his most important amendment—a retrospective period of five years, during which the unqualified man must have been in practice continuously, and then his admission to a separate register was to be a question for the consideration of the

Council of the Royal College; in fact, this and other important matters were left in the hands of the Council. This concession appears to be a great one, when we bear in mind that in 1815 the Royal College of Surgeons had, up to the passing of their Act, to admit on their register every unqualified person who had ever performed the most trifling operation, or medical or surgical duty. It was the same with the chemists, and still later it has happened to the dentists.

An Act of Parliament was passed in July, 1878, entitled "The Dentists' Act," which required that every one who commenced practice as a dentist, *after that date*, should fulfil a curriculum of medical, surgical, and dental studies, and submit to examination for the diploma of "Licentiate in Dental Surgery" of one of the medical colleges.

This legislation was rendered imperatively necessary in order to protect the public, provide competent dental practitioners, and to stop the continual and enormous influx into the profession of men who, neither by previous training nor education, possessed the smallest claim to the title of dentist.

This Act, however, could not interfere with the incompetent and unqualified dentists already in practice, beyond requiring them to register; and on their fulfilling this condition they were allowed to continue as they were.

The following particulars will show that being "Registered by Act of Parliament" is no proof of qualification or professional skill as far as the present generation of dentists is concerned, unless the practitioner holds the "Dental Diploma" of a medical college in addition to the Registration Certificate.

Every one who called himself a dentist, whether qualified or not, was compelled to register before August 1st, 1879; the conditions for registration being simply the payment of the required fee and the filling up of a declaration stating that the applicant had been in *bonâ fide* practice as a dentist, either separately or in conjunction with the practice of medicine, surgery, or pharmacy, before July, 1878.

5,289 persons placed themselves on the register as being in *bonâ fide* practice as dentists, and were classed as follows:—

Licentiates in Dental Surgery of various Medical Colleges, or qualified dentists	483
Physicians and surgeons practising dentistry	50
Dentists without diplomas or qualification	2,707
Chemists and chemists assistants as dentists in conjunction with the pharmacy	2,049
	5,289

Any of the registered are entitled to make use of such titles as Registered Dentist, or Registered Surgeon Dentist by Act of Parliament, or Dentist certified by the Medical Council, etc., etc.; but no one but a qualified dentist can place the letters L.D.S. after his name, and signify that he is a "Licentiate in Dental Surgery" of any medical body, without laying himself open to prosecution and punishment.

We append the Veterinary Surgeons' Bill, in order that, in clauses 15, 16, 17, the advantages we are offered may be compared with those given to other professional bodies when they were first recognised by Act of Parliament. The other great advantages in the preceding clauses are obvious, and especially those contained in clauses 6 and 14. What is to be particularly noted is, that from the passing of the Act the proper title of M.R.C.V.S., which has been assumed by many impostors, is to be dropped at once by them and restricted to graduates of the Royal College; a year is allowed for the registration, in a separate register, of those unqualified men who have been in practice for five years, and whom the Council of the Royal College chooses to admit, under the head of "existing practitioners"—*i.e.*, the further adoption of the title of Veterinary Surgeon by such men ceased five years ago; in two years quackery and imposition cannot exist. We say nothing of the recognition of the Royal College as a body incorporated by Act of Parliament, and for the first time in its existence a perfectly legalised body, enjoying that protection and advantages which similarly constituted bodies, as the Royal College of Surgeons, enjoy.

On the solicitation of the President of the Royal College, the Right Hon. A. J. Mundella, Vice-President of the Privy Council, undertook charge of the Bill in the House of Commons, as at the late period of the session and the great press of business yet on hand a private Member would have no chance of getting it through; and even now if it is opposed, be the opposition of the most trivial character, it runs great danger of not passing, as there is no time to get rid of opposition before Parliament rises. We trust, however, that this may not be so, as the present is an opportunity we shall never again have to get rid, once and for ever, of the terrible incubus which has, for nearly forty years, paralysed and all but ruined us. We hear rumours of opposition to the progress of the Bill, and by members of the profession too; but we can scarcely credit them, though if true it would only be another illustration of the painful truth, that the very worst enemies of the profession have ever been found in its own ranks. Envy, malice, and hatred would be a far more appropriate motto for our corporation than the one it now has, and which must have been given to it in very derision and mockery. "Against stupidity the gods themselves contend in vain." When this stupidity is conjoined with treachery, very slight regard for veracity, duplicity, and all the other defects which mar the reputation of a certain class of mankind, then contention is indeed hopeless.

The following is the Bill as it passed its second reading in the House of Commons on July 18th :—

A BILL INTITULED AN ACT TO AMEND THE LAW RELATING TO VETERINARY SURGEONS.

Whereas it is expedient that provision be made to enable persons requiring the aid of a veterinary surgeon for the cure or prevention of diseases in or injuries to horses and other animals, to distinguish between qualified and unqualified practitioners :

Be it therefore enacted by the Queen's Most Excellent Majesty by and with the advice and consent of the Lords Spiritual and Temporal and Com-

mons in this present Parliament assembled and by the authority of the same as follows:

Short Title. 1. This Act may be cited as the Veterinary Surgeons Act 1881.

Interpretation. 2. In this Act—

"The Royal College of Veterinary Surgeons" means the Royal College of Veterinary Surgeons incorporated and regulated by a Charter and two Supplemental Charters granted by Her Majesty in the years 1844, 1876, and 1879 respectively.

"The Registrar" means the Registrar for the time being of the said Royal College.

"Veterinary surgery" means the art and science of veterinary surgery and medicine.

Provisions as to register of Veterinary Surgeons. 3. (1) The register of members of the Royal College of Veterinary Surgeons directed by Her Majesty's said Royal Charter of 1876 to be made and maintained, shall be styled the Register of Veterinary Surgeons, and shall be kept as accurately as possible by the registrar.

(2) The Council of that College shall cause correct copies of the said register to be from time to time and at least once a year printed under their direction and published and sold, and such copies shall be admissible in evidence.

Provision for examination of students in Scotland. 4. The Royal College of Veterinary Surgeons shall be bound to make provision in the manner permitted by their Charters for the examination in Scotland of the students attending the several Scotch Veterinary Colleges, and to admit and register such students as have passed the examination as members of the said Royal College under the provisions of such Charters and this Act.

Correction of register. 5. (1) The registrar shall from time to time insert in the register of Veterinary Surgeons any alteration which may come to his knowledge in the name or address of any person registered.

(2) The registrar shall remove from the said register the name of every deceased person.

(3) The registrar may remove from the said register the name of a person who has ceased to practise, but not (save as hereinafter provided) without the consent of that person.

(4) Where the registrar has reason to think that any person registered has ceased to practise, the registrar may send by post to such person a notice inquiring whether or not he has ceased to practise or has changed his residence; and if the registrar does not within three months after sending the notice receive any answer thereto from such person, the registrar may within fourteen days after the expiration of the three months send him by post in a registered letter another notice referring to the first notice, and stating that no answer thereto has been received, and if the registrar does not within one month after sending the second notice receive any answer thereto, such person shall for the purpose of the present section be deemed to have ceased to practise, and his name may be removed accordingly.

(5) In the execution of his duties the registrar shall act on such evidence as in each case appears sufficient.

Removal of name from register. 6. The power conferred by the said Supplemental Charter of 1876 on the Council of the said Royal College, at a meeting of the Council, at which not less than two-thirds of the members are present, and with the consent of three-fourths of the members so present, but not otherwise, to remove a name from the register of Veterinary Surgeons may be exercised in respect of any person who is at the passing of this Act on that register, or who is after the passing of this Act placed thereon under

the said Charters or this Act, but in the following cases only (that is to say), at the request or with the consent of the person whose name is to be removed, or where a name has been incorrectly entered, or has been fraudulently entered or procured to be entered, or where a person registered has, either before or after the passing of this Act, and either before or after his registration, been convicted, either in Her Majesty's dominions or elsewhere, of an offence which, if committed in England, would be a misdemeanour or higher offence, or where a person registered is shown to have been guilty, in Her Majesty's dominions or elsewhere, of any conduct disgraceful to him in a professional respect.

Restoration of Name to Register.

7. (1) Where the Council of the said Royal College have removed the name of any person from the register of Veterinary Surgeons, the name of that person shall not be again entered in the register except by a resolution of the Council passed under this section, or by order of a court of competent jurisdiction.

(2) The Council may by resolution passed by a like proportion of their number as is for the time being required for the removal of a name from the said register, direct the registrar to restore to the register any name removed therefrom, either without fee or on payment of such fee not exceeding the registration fee, as the Council from time to time fix, and the registrar shall restore the same accordingly.

(3) The name of any person removed from the said register at the request of such person or with his consent shall, unless it might if not so removed have been removed by order of the Council, be restored to the register, on his application and on payment of such fee not exceeding the registration fee as the Council from time to time fix.

Proceedings for removal or restoration of name.

8. (1) The Council of the said Royal College shall, for the purpose of exercising in any case the power of removing a name from or of restoring a name to the register of Veterinary Surgeons, ascertain the facts of the case by a committee of the Council, the powers of the committee being exercisable by not fewer than three members of the committee ; and the report of the committee, after hearing the person concerned, if he so desires, shall be for the purpose aforesaid conclusive as to the facts, but so that the Council shall form their own judgment on the case independently of any opinion of the committee.

(2) If in any case the Council determines to remove the name of any person from the register of Veterinary Surgeons, or refuses to restore thereto the name of any person, the Council shall, if required by him, state in writing the reason for that determination, and he may appeal to the Privy Council ; and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal, or order that Council not to remove the name of the appellant, or to restore his name, as the case may require.

Evidence of Registration.

9. A copy of the register of Veterinary Surgeons for the time being purporting to be printed and published in pursuance of this Act shall be evidence in all cases (until the contrary be made to appear) that the persons therein named are on the register of Veterinary Surgeons ; and the absence of the name of any person from such copy shall be evidence (until the contrary be made to appear) that such person is not on that register : Provided that in the case of any person whose name does not appear in such copy a certified copy under the hand of the registrar of the entry of the name of such person in the said register shall be evidence that such person is on the register.

Notice of Death of Practitioners.

10. Every registrar of deaths in the United Kingdom on receiving notice of the death of any person on the register of Veterinary Surgeons, shall forthwith transmit by post

to the registrar a certificate under his hand of such death, with the particulars of time and place of death, and may charge the cost of such certificate and transmission as an expense of his office.

Penalty on Obtaining Registration by false representation.

11. Any person who wilfully procures or attempts to procure himself to be placed on the register of Veterinary Surgeons by making or producing or causing to be made or produced any false or fraudulent declaration certificate or representation either in writing or otherwise, and any person aiding and assisting him therein shall be deemed guilty in England or in Ireland of a misdemeanour and in Scotland of a crime or offence punishable by fine or imprisonment, and shall on conviction thereof be liable to a fine not exceeding fifty pounds or to be imprisoned with or without hard labour for any term not exceeding twelve months.

Penalty for wilful falsification of register.

12. If the registrar wilfully makes or causes to be made any falsification in any matter relating to the register of Veterinary Surgeons he shall be deemed guilty of a misdemeanour, and shall be liable to a fine not exceeding fifty pounds, or to be imprisoned with or without hard labour for any term not exceeding twelve months.

Registration of colonial or foreign practitioner with recognised diploma.

13. (1) Where a person shews that he holds some recognised veterinary diploma granted to him in a British possession, and either that the grant of such diploma occurred when he was not domiciled in the United Kingdom, or in the course of a period of not less than five years during which he resided out of the United Kingdom, or, if he was practising veterinary surgery in the United Kingdom at the passing of this Act, that he has practised veterinary surgery for not less than ten years, either in the United Kingdom or elsewhere, he shall upon payment of the registration fee be entitled without examination in the United Kingdom to be registered as a colonial practitioner in the register of Veterinary Surgeons and to become to all intents a member of the said Royal College.

(2) Where a person shews that he obtained some recognised veterinary diploma granted in a foreign country, and either that he is not a British subject, or, that if a British subject he has practised veterinary surgery for more than ten years elsewhere than in the United Kingdom, or if he was practising veterinary surgery in the United Kingdom at the passing of this Act for not less than ten years, either in the United Kingdom or elsewhere, and either continues to hold that diploma or has not been deprived thereof for any cause which disqualifies him for being registered under this Act, he shall, on payment of the registration fee, be entitled without examination in the United Kingdom to be registered as a foreign practitioner in the register of Veterinary Surgeons and to become to all intents a member of the said Royal College.

(3) For the purposes of this section a veterinary diploma is any diploma, licence, certificate, or other document granted by any university, college, corporation, or other body in respect of veterinary surgery, and includes a licence or authority to a person to practise veterinary surgery granted by any department of or persons acting under the authority of the government of the country or place within or without Her Majesty's Dominions wherein the licence or authority is granted; and a British Possession is any part of Her Majesty's Dominions out of the United Kingdom; and a recognised veterinary diploma is a veterinary diploma recognised for the time being by the Council of the said Royal College as furnishing a sufficient guaranty of the possession of the requisite knowledge and skill for the efficient practice of veterinary surgery, and as entitling the holder thereof to practise veterinary surgery in the British Possession or foreign country wherein the diploma was granted.

(4) If a person is refused registration as a colonial practitioner, or as a foreign practitioner, the Council of the said Royal College shall, if required by that person, state in writing the reason for that refusal, and if that reason be that the veterinary diploma held or obtained by him is not a recognised veterinary diploma, that person may appeal to the Privy Council, and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal or order that Council to recognise that veterinary diploma.

Confirmation of Charters.

14. The said Charters of the Royal College of Veterinary Surgeons are hereby confirmed, and are declared to be and shall be in full force and virtue, except as far as the same are by this Act altered, or as the same are inconsistent with this Act, but not so as to prevent the making of any amendment thereof or addition thereto by any supplemental Royal Charter not being inconsistent with this Act.

Title of existing veterinary practitioners to be registered in College.

15. (1) Where at the passing of this Act any person practises and has continuously for not less than five years next before the passing of this Act practised veterinary surgery in the United Kingdom,* but is not on the register of Veterinary Surgeons, he shall be entitled, subject to the provisions of this Act, to be placed on that register, without examination, on such terms as to payment of fees, and as to other matters, as the Council of the said Royal College, with the approval of the Privy Council, directs.

(2) On any person applying for registration under this section within one year after the passing of this Act, and thereupon, or within a reasonable time thereafter, producing to the Council of the said Royal College evidence of his title to registration by statutory declarations of himself and of other persons able to testify on his behalf, or such other evidence as that Council reasonably requires, he shall be registered under direction of that Council accordingly.

(3) If a person is refused registration under this section the Council of the said Royal College shall, if required by him, state in writing the reason for that refusal, and he may appeal to the Privy Council; and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal or order that Council to register the appellant under this section.

(4) The names of the persons registered under this section shall be placed in a separate division of the register of Veterinary Surgeons under the heading "existing practitioners," but no such person shall be deemed to be a member of the said Royal College within the said Charters or this Act.

Penalty on false representation as to membership of college.

16. If after the passing of this Act any person not being a Fellow or a Member of the Royal College of Veterinary Surgeons takes or uses any name, title, addition, or description, by means of initials or letters placed after his name, or otherwise, stating or implying that he is a Fellow or a Member of the Royal College of Veterinary Surgeons, he shall be liable to a fine not exceeding twenty pounds.

Penalty on misrepresentation after 1883 as to qualification to practise and incapacity to recover fee, &c.

17. (1) If after the thirty-first day of December, 1883, any person, other than a person who for the time being is on the register of Veterinary Surgeons, or who at the time of the passing of this Act held the veterinary certificate of the Highland and Agricultural Society of Scotland, takes or uses the title of Veterinary Surgeon or Veterinary Practitioner, or any name, title, addition, or description stating that he is a Veterinary Surgeon or a practitioner of

* At the request of the President R.C.V.S., Mr. Mundella consented to introduce the words here "under the title of Veterinary Surgeon."

veterinary surgery or of any branch thereof, or is specially qualified to practise the same, he shall be liable to a fine not exceeding twenty pounds.

(2) From and after the same day a person other than as last aforesaid shall not be entitled to recover in any court any fee or charge for performing any veterinary operation, or for giving any veterinary attendance or advice, or for acting in any manner as a Veterinary Surgeon or Veterinary Practitioner, or for practising in any case veterinary surgery, or any branch thereof.

Exercise of powers of Privy Council.

18. (1) All powers vested in the Privy Council by this Act may be exercised by an Order of Council made by two or more of the Lords and others of Her Majesty's Most Honourable Privy Council.

(2) An order made by the Privy Council under this Act may be made conditionally or unconditionally, and may contain such terms and directions as to the Privy Council seem just.

(3) The Council of the said Royal College shall forthwith obey any Order of the Privy Council under this Act, and observe and fulfil all conditions, terms, and directions therein contained.

Summary proceedings for fines and imprisonment.

19. Fines and imprisonment under this Act may be recovered and imposed summarily that is to say—

11 and 12 Vict. c. 43.
42 and 43 Vict. c. 49.
27 and 28 Vict. c. 53.

in England in manner provided by the Summary Jurisdiction Act 1848 and the Summary Jurisdiction Act 1879 and any Act amending either of those Acts;

in Scotland before the sheriff or sheriff-substitute or two justices in manner provided by the Summary Procedure Act 1864 and any Act amending the same;

14 and 15 Vict. c. 93.

in Ireland within the police district of Dublin metropolis in manner directed by the Acts regulating the powers and duties of justices of the peace for such district or of the police of such district, and elsewhere in Ireland before two or more justices of the Peace in manner directed by the Petty Sessions (Ireland) Act 1851 and any Act amending the same.

A prosecution under this Act may be instituted by the Council of the Royal College of Veterinary Surgeons but shall not be instituted by a private person without the written consent of the said Council.

THE ANATOMY AND PHYSIOLOGY OF THE THIRD STOMACH OF RUMINANTS.

(*Concluded from page* 41.)

THE anatomy of the part has taught us that the longitudinal muscular layer of the psalter wall is much less inconsiderable than the circular, which is often three or four times as strong and thick as the former. When, therefore, the walls of this stomach contract in toto, the effect must be a diminution in the transverse diameter; that is, the spaces between the leaves will become lessened, and the food contained therein pressed upon and broken down. Accompanying this contraction, there must of necessity be a movement of the leaves, especially of those whose warty papillæ have, from the muscular contraction, become stiff and firm. All these hardened processes are thus drawn like the prongs of a harrow through the cake-like masses of food.

In order to render this action still more energetic, the leaves become by the operation of the central muscular layer shortened in breadth, and consequently thickened and stiffened. Another result must be the closure of the

chambers. The closure, however, is not so complete as to prevent the escape of fluids ; on the contrary, from the uneven surface of the leaves numbers of canaliculi are present, through which the fluid as it is pressed out by the contraction of the leaves finds its way. In this manner the alimentary matter loses moisture, becomes inspissated, and consequently more easily ground down.

The movement of the leaves is, moreover, *successive*, every portion of the outer wall not contracting simultaneously, but gradually, so that whilst one leaf is passing forward another is returning to its original position, *i.e.*, is moving in a contrary direction.

Inasmuch as these movements are almost constantly taking place, and the psalter is always in a certain state of contraction, the pulverization of the food must be continually going on. No reasonable doubt can therefore be entertained that the third stomach is a *triturating apparatus*, and well adapted to play the part of a mastication-stomach. A simple examination of the contents reveals this fact—the food in the abomasum end appears finer than in the anterior end (Haubner). Ocular demonstration is, however, not infallible —it may deceive. In order, therefore, to ascertain the truth of this view, Professor Ellenberger instituted a succession of experiments, the details of which appear in the original article. The results completely bear out the view that the psalter represents a mastication-stomach, whose function is the pulverization of the insufficiently chewed aliment. It ruminates, in fact, the non-remasticated food, and acts the part of a watchman in preventing such coarse materials reaching and irritating the sensitive mucous membrane of the fourth stomach.

The second, third, and fourth questions may be conveniently studied together. Owing to the expression of fluid by the leaves, and to gravitation of the same, the food in the lower portions of the chambers must be much richer in fluid constituents than that in the upper, that is in the neighbourhood of the greater curvature. A second set of experiments corroborated this view. The fluid passes under the influence of the above causes into the psalter groove, and thence to the abomasum.

One might regard these facts as sufficient to explain the exsiccation of the omasum contents, as well as the fact that they are always found to be drier than those of the other stomachs. Other explanations may, however, be offered to solve the latter fact. Haubner and others have already demonstrated that liquids and semi-liquids, such as gruel, may reach the abomasum without passing between the leaves, and undoubtedly the major portion of the pure fluids do take this course. A part may possibly be attracted by the dry masses into the chambers. From the above we therefore derive two facts, between which it is essential that we should distinguish.

1. That the food which arrives in the compartments of the third stomach is much poorer in fluid constituents than that which arrives in the other stomachs.

2. That a very considerable portion of the fluid which does reach the chambers is very soon pressed out again—pressed out again not only by contraction of its own walls, but also by pressure on the psalter by the rumen in rumination and by the diaphragm in respiration.

These facts will enable us to answer question No. 3. The query stlil remains, however, is the diminished fluidity accelerated by absorption by the psalter mucous membrane ? and if so, to what extent ? That it is in a position to absorb liquids there can be no doubt, but that it is particularly adapted or specially designed for this function, or that the psalter is an absorption-stomach, and as some have asserted an absorption-organ of extraordinary potency, we beg leave to doubt, and even to deny. If the anatomical characters of this membrane be borne in mind, the correctness of our asser-

tion will, we think, become perfectly apparent. Covered by several tolerably thick layers of plaster epithelium, firmly attached to the parts lying beneath, it is only some considerable time after death that the mucous membrane can be detached. Its epithelium, like that of the rumen, is but slightly permeable. Experiments with potassium hydrate revealed the resistant power of the epithelial cells. On pouring this reagent on to the mucous membrane, its epithelial layer was easily detached, but no quicker than that of the rumen. When we examined, however, the horny layer under the microscope its cells were observed to resist the action of the reagent for a considerable length of time, and especially those covering the apices of the papillæ. Artfiicial juices produced no effect whatever. In the reticulum half especially is the epithelial layer so thick, so firmly attached, and the summits of the horny elevations so considerable, that we are justified in regarding absorption as almost an impossibility.

Nor does the arrangement of the blood and lymph vessels resemble that found in an absorption-organ, but rather that of the skin. Both are, by virtue of the thickness of the epithelium, far removed from the surface.

But in order to substantiate this assertion, based only on anatomical facts, I deemed it again advisable to resort to experiment, and to this end the following methods suggested themselves to my mind. Firstly, to examine the omasum contents after the opening into the abomasum had been tied, in order to prevent the escape of fluids; secondly, to test the rapidity of absorption by injecting into a stomach, previously tied at both ends, a fluid coloured in such a manner that it could easily be recognized again in the blood; and lastly, to establish a fistulous opening with the abomasum end of the omasum, in order to ascertain the consistency of the mass as it left the third stomach.

The difficulty in carrying out these operations, as well as the apparent superfluity of the same, determined me to abandon the attempt, and to resort to other means, viz., to ascertain the diffusion capability of various animal membranes, and then to compare it with that of the psalter mucous membrane. From this I should be able to judge of the absorption capability of the latter, for the diffusibility of a membrane is always in proportion to its absorption capability.

Omitting details of these experiments, we pass on to notice the deductions which Professor Ellenberger draws therefrom. He says, These experiments show that the intestinal mucous membrane is far more permeable than that of either the first or the third stomachs, and that the psalter is slightly less permeable than the rumen. The diffusion of the solutions was always first noticeable through the intestinal mucous membrane. These conditions became, however, after a while reversed, and more fluid passed through the membrane of the omasum. It is then clear that the epithelium of this stomach offers a great resistance to the diffusion of fluids, and only when this layer has become permeated and softened does diffusion to any extent take place. Thus, whilst freshly obtained mucous membrane permitted the passage of only 0,08 grammes of sugar in thirty hours, 0,66 grammes passed through mucous membrane which had been previously macerated in warm water for twenty-four hours. The conclusion is therefore forced upon us that being permeated with such difficulty, the psalter mucous membrane cannot be regarded as a good absorbent medium.

I quite agree with Fürstenberg that fat molecules are to be found in the epithelium, but disagree with the deduction he draws, that they are derived from the contents of the omasum. I gave sheep with their usual food fat, fatty emulsions, and fatty emulsions strongly tinged with alcanna red, without being able to notice either any increase in the amount of fat in the cells or the presence therein of the coloured fat molecules.

As regards question No. 1, I may here remark that the results of my examinations are quite in accordance with those of all modern observers, viz., an entire absence either of glands or lymph follicles in the psalter mucous membrane. Further, no resemblance can be traced between its epithelium and that of secretory organs, although it must be acknowledged that the course of the blood-vessels is very similar. On anatomical and experimental grounds I must therefore answer this question in the negative. (Details given in original article.)

RESUME.

Reasoning from the preceding facts and experiments, we may arrange our conclusions as follows :—

1. *The psalter has no secerning function.*

2. Chemical digestive processes occurring therein are limited to the action of the saliva swallowed with the food, and to the decomposition processes.

3. *The psalter is a masticating stomach, a triturating, pulverizing apparatus.* Its action is more especially brought to bear on that portion of the food which has escaped rumination, and may even to some extent replace this function. It hinders the entrance of food into the abomasum which, but for its action, would irritate and injure the sensitive mucous membrane of that organ. It brings the food into such a finely divided state that the action of the digestive juice upon every part is greatly facilitated.

4. The psalter, being furnished with automatic centres, is in a position to carry out the above.

5. Its mucous membrane is anatomically *very unfavourably adapted for carrying on the function of absorption, imbibes with difficulty, and is but slightly permeable to the fluid nutritive materials. The exsiccation must therefore be due to some other cause than absorption of the fluid constituents of the food.*

6. Its contents are much drier than those of the other stomachs—a condition brought about by the operation of the following factors. The principal portion of fluids passes along the psalter groove direct to the abomasum, so that but little reaches the chambers ; the *loss of fluid* in the chambers is due *to the pressure brought to bear on their contents and to gravitation.* This gravitation or voluntary flowing away must just as certainly occur as it does in a semi-fluid mass placed on a filtering cloth. If we squeeze the cloth we increase the flow. *It is precisely the same in the psalter. The loss of water is essentially the result of pressure exerted on the cake-like masses of food by the contraction of the psalter walls*, aided by external pressure. The loss by absorption is but very trifling, and can only be considered of importance in cases where the food is retained for an abnormally long time in this portion of the digestive tract.

The purpose served by the exsiccation which here occurs is twofold. In this dry, hardened condition it more readily yields to the rasp-like action of the laminæ ; and, secondly, this finely divided, pulverized state greatly favours the action of the digestive juices.

The fluids which flow from the omasum are either quickly absorbed in the abomasum or pass rapidly onwards to the intestines, so that the digestive juice becomes but slightly diluted.

The assertion that this dryness serves to prevent a backward flow of the abomasum contents during rumination cannot be regarded as true. The lower canal of the omasum is still open, and, were no other hindrances placed in the way, dryness of itself would not suffice to prevent the passage of food along this canal. The sphincter and velum, and at the reticulum end the contracted œsophageal groove, are the hindrances, the obstacles to be over-

come (Lemoigne). The most trifling contraction of the third stomach is sufficient to prevent the re-entrance of food into its chambers. Further, it is scarcely probable that nature would have adopted such a complicated method in a case where the simplest valvular arrangement was all that was required.

Before quitting this subject, I should like to offer a few suggestions which may serve to solve the question so often asked, How does it come about that in those diseases with which a paretic and paralytic condition of the first stomach is combined, increased dryness of the contents of the third stomach should take place?

The reasons are not far to seek. The conditions are exactly the same as when we place a mass of moistened oatmeal in a vessel whose bottom is porous and permeable. The mass becomes gradually drier and drier, from the draining away of its water. If the food remains a long time in the psalter, the absorption will also play a part in aiding this exsiccation.

One of the main factors, however, in producing this excessive dryness is the cessation in the supply of new moist alimentary matter to that already contained in the chambers.

In rumination every time that a bolus of food passes beneath the velum pendulum palati a certain quantity of fluid (which has been expressed by pressure from the bolus) is re-swallowed (Fürstenberg). The majority of this will pass along the œsophageal and psalter grooves direct to the abomasum, a small portion being, however, taken up by the dry masses in the psalter chambers. When, therefore, in disease rumination ceases this constant addition of moisture no longer occurs.

The most essential fact, however, to be borne in mind is that no more food is swallowed. The freshly arrived masses are rich in liquid, and they it is which prevent under normal circumstances an excessive dryness. Whether it be accepted that they pass from the mouth direct to the omasum, or that every time a bolus is forwarded from the rumen to the mouth a similar portion is lifted from the reticulum into the œsophageal groove to be passed into the omasum, or that the latter occurs only in the intervals of rumination and feeding, the effect in disease will be the same. The rumen and reticulum being in a paralytic condition, this swallowing must cease. But before the reticulum becomes entirely inactive its contractions are less energetic, so that the food and fluids are only elevated as high as the bridge along which they travel direct to the abomasum. Thus, even prior to complete inactivity setting in, the entrance of moist masses into the psalter chambers has ceased.

The above facts fully serve, we think, to explain the extraordinary degree of dryness of the psalter contents in diseases combined with paralysis of the first two stomachs.

EXCERPTS FROM FOREIGN JOURNALS.

BY H. W. STEEL, ARMY VETERINARY DEPARTMENT.

Pleuro-pneumonia Contagiosa.

Two articles in *Achives Vétérinaires*, one in *Annales de Méd. Vét.* and *Bulletin de l'Aca. Royale de Belgique*, 1881. M. Delmotte discusses the manner in which Pleuro-pneumonic virus inserted under the skin acts. His observations are based on a question by M. Rossignol, "Are animals reputed healthy, but inoculated as a preservative against prevalent Pleuro-pneumonia, by the operation rendered capable of communicating the disease to other cattle, among which they are allowed to move and work? Otherwise ought they to be sequestrated as suspected animals are by law required to be? or

would a shorter quarantine suffice? and, if so, what should be *its* duration?" In the case of Variola and Sheep-pox, vaccine or Sheep-pox virus gives rise to a benign attack of the same (?) disease, which, by purifying or despoiling the system in a special manner, preserves it from a more severe attack of Variola or Sheep-pox. This explanation is well based and rational, but in Pleuro-pneumonia we are entirely ignorant of the mode of action of the virus, except that when this is introduced beneath the skin it does not produce chest lesions, and so if there is Pleuro-pneumonic infection we have no proof of it in lungs or pleura. There were three original theories advanced in 1855.

I. Dr. BÖENS, of Charleroi, considers inoculation causes a more or less prolonged artificially produced disease, which, by the eliminations it causes, and by the systemic changes it produces, renovates the substance of the body and purifies the economy. So Verheyen has formulated a pathological principle: "Every general or generalized disease which has lasted for a certain time and been followed by a return to health, *usually* fortifies its victims against most of our epidemic and epizootic disorders." Boëns believes in vaccinal inoculation, but not in the specific virtues of vaccine. He believes the systemic perturbations caused by vaccine secure, to an extent, immunity from eruptive and continuous fevers other than, as well as Small-pox. This view, if true, would explain the hitherto incomprehensible facts that knackers enjoy an immunity from Glanders, Farcy, and Charbon, also night-men from Typhoid Fever, Cholera, etc. This view is to be looked upon with reserve; thus, if it be true, in 1871 animals inoculated for Pleuro-pneumonia ought to have escaped Cattle-plague. Again, other similar facts bear against it.

II. M. THIERNESSE considers that the temporary preservation which is attributed to inoculation must be due to a derivative or revulsive action, rather than a true action of a force. Thus MM. Bouley and Mollereau find that inoculation gives rise only to a local affection at the seat of inoculation, and as it does not cause Pleuro-pneumonia, the animal inoculated cannot convey that disease.

III. M. CAGNY, of Senlis, considers that Pleuro-pneumonia in all its virulence is produced by inoculation; but then the local phenomena of the disease are brought about in an organ of minor physiological importance, and therefore this disease is less dangerous to the animal. In all cases of effective inoculation he observes a general disease with febrile symptoms in addition to the local disorder, which latter is denoted by lesions exactly resembling those found in the lungs in the ordinary disease (which is truly produced by *pulmonary inoculation*). M. Cagny's view is only, we believe, the expression of a pure induction from data more or less theoretical, the value of which as basis for argument is therefore most doubtful. It must be remembered that we have no evidence that Pleuro-pneumonia affects the blood: introduced by inoculation into the system of animals, that fluid has not proved protective. M. Cagny must also remember that many simple local lesions are frequently associated with constitutional disturbance. Also the local lesions, whether in lungs or tail, are only the ordinary results of inflammation: they, in themselves, give no evidence of specificity. What, then, is a generalized malady? We deem it one in which all parts of the organism are, or can be, the seat of the specific lesions of the disease, in which a virus or deleterious agent affects the whole system or causes blood disorder by its toxic influence.

M. WILLEMS, who has made this disease a special study for thirty years, considers it undoubtedly *general* and *specific*. He finds its plastic exudations everywhere—in the liver and muscles, for example. He and M. Van Kempin, in 1851, first pointed out the presence of a corpuscle with a special movement in the fluid product of Pleuro-pneumonia. The disease therefore is parasitic, not virulent. M. Willems also states that the liquid from the swelling which results from inoculation is preservative, and loses none of its virtues at the

twenty-fifth generation. He attempted to generate the disease in lungs and pleura by means of a "spray" apparatus, but with negative results. The fluid from the inoculated part destroys rabbits or guinea-pigs in about thirty-six hours, and the blood from this gives similar results when inoculated into a second similar animal. At St. Gall (Switzerland), in July, 1880 a butcher scratched himself in cutting up the carcase of a Pleuro-pneumonic beast. The arm became inflamed, but was neglected at first, and the unfortunate fellow died after two days of cruel suffering (see *Gazette de Lausanne*, 29 July, 1880). Probably all these are septicæmic rather than Pleuro-pneumonic results. It is also considered that immunity may be conferred by inoculation without any apparent diseased changes of the inoculated part; thus, if immunity is not secured by local lesions, it must result from an imperfectly known specific action of the virulent fluid on the organism.

Four theories have been brought forward to explain how the virus acts as a preservative.

I. *Theory of Spoliation* (Pasteur and Chénier). Attributes immunity to the despoiling action of microbia introduced into the circulating blood. In the production of one crop of microbia the soil is so exhausted as to ensure freedom for some time (longer or shorter). It therefore matters little, according to M. Chénier, whether the lungs or skin be the way of entry, in so far as the immunity is concerned: the main difference is in the relative importance of the local lesions. This is a plausible view, but are the organisms present sufficient for so great results? If their power prove great enough to overcome their want of numbers, they must act *for some time.* Can we allow that a few enfeebled microbia, being for a short time in an organism, will suffice to so thoroughly despoil it of all nourishment?

II. *Theory of Toxic Excretion.*—Supposes that the Bacteria of the inoculated fluid excrete a toxic principle which opposes the development and multiplication of like Bacteria. Here, again, it cannot be admitted that a small number of microbia can have so great influence as thousands of the same beings, unless length of time atones for paucity of numbers.

III. Willems and Cagny suppose that the engorgements at seat of inoculation are *Pleuro-pneumonic*, and the morbid processes confine themselves to these parts and yet exonerate the lungs; but the swelling is not essential, and may be only septic.

IV. (Böens and Verheyen.) The inoculated fluid when absorbed produces so marked systematic disturbance as to ensure immunity against fresh infection.

The problem we are discussing is unsolved. *We do not know how the "vaccines" (any fluids used for preservative inoculations) act;* but this will not prevent our benefiting by their indubitable utility.

MM. Bemylants and Verriest, of the University of Louvain, in March last, found the Pleuro-pneumonic bacterium or microbim in the lung tissue and expressed fluid, and also in the fluid obtained from an inoculated part. They also cultivated this organism, in order to more certainly establish its nature and relations to Pleuro-pneumonia, and also to produce it in large quantities and free from impurities. The "culture fluids" used were beef tea made from muscles or lungs, also a solution of Liebig's extract. After exposure of the flasks to 19°, on the third day the contained fluid became turbid and flocculent, and was, on microscopical examination, found to contain an enormous number of cocci isolated, in pairs or fours, or in threes arranged in a triangle; some even in series of four or five and ten, so as to form long chains; others in groups of various sizes, of which, however, the components were more or less regularly arranged. Size of cocci variable, the largest being about one micromillimetre in diameter, and moving slowly, their figure slightly oval; the smallest being spherical and rarely isolated,

also with slow movement. The isolated cocci moved much more freely. There were also red corpuscles, shrunken and deformed, and some accumulations of white corpuscles, swollen and riddled by cocci. The cultures were successfully made hundreds of times, and cocci which had been kept in closed tubes for a month gave excellent cultures. The limit of resistance of the coccus to temperature was found to be 59°—60°. Many successful inoculations have been made with these culture fluids, pustules resulting at the seat of inoculation, and the fluid contained in them bearing micrococci in abundance. In no case did the septic gangrenes which follow ordinary inoculation with pulmonary exudation result; this is therefore an accident, resulting from impurity of the fluid ordinarily used. At present experiments are being made with a view to the introduction of the disease through the respiratory organs, the animals used being kept in a cloud charged with micrococci produced by a spray-diffuser. In discussing the recurrence of Pleuro-pneumonia after recovery from the disease, naturally or artificially generated, M. Willems quotes the results of the 867 inoculations on many farms as published by Sigs. Capitani and Franceschi, of Milan: "(1) Inoculation is the only preservative against Pleuro-pneumonia; (2) it preserved from contagion ninety-seven per cent. of the animals inoculated; (3) five per cent. had extensive inflammation of the tail; (4) inoculation produces no effect on animals once successfully subjected to this operation." To learn whether inoculation affects the whole organism or is purely local in its action, inoculations were subsequently made in other parts of the body than that originally operated upon, but without effect. It was judged that a second or even third inoculation is useful to ensure safety, as MM. Chauveau and Pasteur have proved, in Anthrax and Fowl Cholera. The more successful the inoculation as a preventive, the greater the swelling of the inoculated part. M. Lenglen, of Arras, says, "At the present time (1863) I am making use of virus of the twenty-fifth remove, which has lost none of its preservative value." A Belgian scientific commission, nominated by the Minister of the Interior, will shortly investigate inoculation for Pleuro-pneumonia at the State Veterinary College.

Anthrax.

On 14th March last the Academy of Sciences, Paris, awarded the Bréant prize, value 5,000 francs, to Professor Colin, of Alfort, for his researches on Septicæmia and Anthrax. This award is well timed, for the journals contain his paper read before the Academy of Medicine on 4th November, 1879. He had previously found that virulence in a not very long time after burial, disappears from a carcase. Pasteur affirms that the soil around takes up the bacteria and acts as a culture medium for them. He buried Anthrax victims, and subjected the superincumbent soil to influences of the most varied kind which could be suggested to influence bacterial development. He fed thirty-five animals on plants, dry or moist, grown over the carcases, without ill effect. "These first results," says he, "are already anything but favourable to the hypothesis of a culture and preservation of the elements of virulence in soil containing Charbonous *debris*. If these elements were in the soil which covered over sixty carcases, how was it they produced no effect on at least some of the thirty-five (also the sixty-one subjects of experiment who were parked for half a day or for an entire day on the soil) fed four times on the fresh herbage, mixed with mould and dust, brought directly from above the carcases, and also consumed food sprinkled by design with powdered and dried earth, etc.?"

Glanders.

M. Galtier has been inoculating dogs with Glander material, and has always communicated the disease to them. The morbid lesions in almost

all cases remain localized at the seat of inoculation, but an apparently non-diseased lymphatic gland from one of the subjects caused the disease in an ass. The dogs invariably recovered completely, but could be inoculated successively a number of times, and virus passed through the system of the dog caused death of asses only after attacks lasting from three weeks to a month. The author indicates this as a sign of loss of power of the virus, and suggests further experimentation in this direction. He also judiciously advises that the inoculation test for Chronic Glanders be made on the dog rather than on the ass. The local lesions in the former are exactly those of a Farcy ulcer in the horse.

Rabies.

The following instructions have been published in the Department of the Seine :—"Every person bitten by a mad dog should take the following precautions :—(1) *Immediately*, by energetically squeezing the parts around the bites, slight as well as deep, cause them to *bleed* freely, and *wash* them as completely as possible with lots of water, with a jet of water if possible, or with any other available liquid (urine even) until cauterization. (2) This can be done with Vienna caustic (nitrate of silver?), butter of antimony, chloride of zinc, or preferably a red-hot iron. Any piece of iron (the top of a rail, a pressing or plaiting iron, or key) raised to a red heat will serve the purpose, *and should be made to touch every part of the wounds.* (3) The success of these cauterizations depends on the promptitude with which they are made : *any one can carry this out before the arrival of the doctor.* (4) Cauterization with ammonia and alcohol are entirely useless."

THE STRONGYLUS BRONCHIALIS.*

BY MR. GREY, JUNIOR, M.R.C.V.S.

AT the present day there cannot possibly be an individual whose occupation leads him amongst cattle and sheep, who is not aware that there is an affection to which these animals are prone in certain seasons, such affection being vulgarly termed Hoose, Husk, Wisk, etc.

This disease is caused by the presence of a parasite in the bronchi and air vesicles, and which causes so much irritation to the mucous lining of these structures that the animal is generally seen to be constantly coughing ; that cough being a very peculiar one, and not easily forgotten if once heard, but difficult to describe, hence the affection has received so many uninstructive names.

On making a *post-mortem* examination of an animal that has died, or has been killed and found affected, there is never any difficulty in finding these parasites in the bronchial tubes, as they attain very respectable dimensions considering the locality they are found in, some of the largest being about two-and-a-half to even three inches in length, and closely resembling a coarse cotton thread after having been steeped in water for a short time ; hence the class to which they belong is termed *Hemaboiæ* (round or thread worm), and as they are of rather a whitish-yellow colour, they are easily detected lying on the surface of the more or less inflamed mucous membranes. In some cases thousands of these worms may be found in a bronchus rolled up into a mass of entanglement, whilst in others one has to track up the smaller bronchi with the point of the scalpel before they are detected. In all cases there is very little time or trouble required before one can safely come to the conclusion whether an animal has suffered or not from this lung worm. Their presence (if seen) is the proof positive of the disease.

* Read at the meeting of the Scottish Metropolitan Veterinary Medical Association, on May 18th.

But I would ask, as others have done before me, How came these worms here? and how did they gain access to the lung structure? Able writers have discussed these questions, and various theories and suggestions have been put forth, but as yet no positive proof has been brought to bear to verify these theories and suggestions—in fact, the question is as yet undecided. Some authors are under the impression that these worms gain access to the lungs in a comparatively direct manner by passing down the trachea; whilst Mr. Armitage, in his essay on "Hoose," published in the Highland and Agricultural Society's "Transactions" for 1878, asserts that the ova are carried to the lungs from the intestinal tract by means of the circulation, and (to quote his own words) "*are eventually arrested by the tissue of organs most favourable to their wants and development, which, in the present instance, is the lungs of lambs and calves.*"

Why the lungs of calves and sheep should be endowed with the functional power of arresting such substances traversing the circulation as the ova of the strongylus, is to me inexplicable. Had the ovum of a strongylus the power whereby it could arrest its own progress whilst being carried through the circulation, then it would be very feasible that it would do so when it arrived at the suitable pabulum for its own growth and development; but it so happens that these ova, which may be compared to a miniature fowl's egg, have no more power to arrest their progress whilst being swept along with the circulation than has a fowl's egg when thrown into a mill race. Moreover, I have spent days of fruitless search examining microscopically the blood of suitable animals for the presence of ova, yet on careful examination of *extremely thin* sections of lung-tissue I have been able to detect the parasite in all its different stages of development: here the unbroken granulated ovum; there the newly-escaped embryo; in another portion of the field could be seen the still further developed parasite; and lastly, portions of the adult worms, which, being too large to escape the section knife in the cutting of a specimen not $\frac{1}{1000}$ part of an inch thick, consequently became severed. (These specimens I now retain in my possession.)

Dr. Cobbold's experiments go a long way to show that this parasite—like a great many more, *probably*—has for its proper development an intermediate bearer. I cannot, however, reconcile the statement made by Mr. Armitage, that its progenitors are the worms found in the intestines. If such were the case, and their ova were carried by the blood, surely investigation (microscopically) of an animal's blood would give some satisfactory result by the detection of these ova in the blood. Moreover, he tells us that the worm whilst residing in the lungs is not capable of propagating its own species, and denies the fact that they are endowed with generative organs whilst in this locality. This statement is certainly erroneous. I have never had much trouble in making out both male and female, and as regards the latter I have never as yet examined one taken from the lungs of either sheep or calf that was not literally crammed with ova and embryo, an example of which is under one of the microscopes at present on the table.

Mr. Armitage seems to believe that the ova find a natural passage between the epithelial cells investing the villi of the intestines; the fact is, however, that one of these ova is as large as five epithelial cells taken together, and every one must know that no such apertures sufficiently large to admit anything the size of an ovum exist between the epithelial cells. The experiment with finely divided charcoal proves nothing, as there is no comparison between the size of the charcoal particle and that of a strongylus ovum.

The following is a brief description of my experiments with this parasite:—

On either the second or third Thursday in the month of April, 1880, a sheep was slaughtered in the Edinburgh abattoir, and was found to be affected with some lung disease. A portion of the lung (about four inches square)

was given me to make a microscopic examination of, but, being rather busy, I forgot to take the specimen home with me. Not being at college till the following Monday, all thoughts of this piece of lung escaped my memory until my attention was again called to it by Professor Walley. It had been lying all this time wrapped in a piece of brown paper—the weather, I may remark, being extremely cold as snow was lying on the ground.

On the Monday evening I took the specimen home and subjected it to the following treatment :—Upon unwrapping the parcel the first conclusion I came to was that it had been a case of disseminated Catarrhal Pneumonia (as I had no information given me as to what the lesion was), but on squeezing the lung structure I failed to get the catarrhal pellet oozing from the bronchi ; still I was under the impression that it was a case of Catarrhal Pneumonia, and consequently subjected the specimen to the *general treatment as regards preparation for microscopic investigation.* How it was that I got the following results I never yet can account for.

In the first place, I selected a portion of the lung, about three-quarters of an inch square, and placed it in the well of the microtome embedded in gum mucilage. I then packed a freezing mixture of snow and salt into the body of the instrument for the purpose of freezing the gum, and also freezing the portion of lung, whereby it could be cut by the section knife into extremely thin sections. The process of freezing occupied nearly three-quarters of an hour, as the room I was working in contained a fire. When thoroughly frozen I cut from this portion of lung between 700 and 800 sections. When each section was made it was transferred from the blade of the section cutter into clean, chilled water for the purpose of thawing out the frozen gum and gettin rid of entangled air-bubbles. In this water the sections were thoroughly washed, and then transferred into the following staining solution:—Carmine grs. xx., Strong Liq. Ammonia ʒiss., Distilled Water ʒiv., Camphor sufficient to saturate the above ; in which they were allowed to remain for *five minutes.* From this solution they were taken and placed in water strongly acidulated with glacial acetic acid, for the purpose of washing off superfluous staining ; from thence they were placed on a glass slide, and mounted in a fluid, which consisted of a saturated solution of arsenious acid in boiling water, together with glycerine and gum arabic.

On applying the cover glass and examining the specimen with the low power (fifty diams.) hurriedly, I noticed that the air vesicles were infiltrated to a great extent with some material which required a much higher power to make out, and on applying the high power (300 diams.) what appeared under the low power as an infiltration, *was a living mass of strongylus embryo*, endowed with the most lively movements, each working its own way from one air vesicle to another—now in focus, now out ; then appearing as if crossing the superficial layer of the specimen ; then diving eel-like amongst the deeper layers, thereby necessitating one hand constantly on the fine adjustment to be able to follow their movements, which were easily discerned, as the carmine solution had stained the lung structure deeply, whereas the embyros were not affected, and remained of a yellowish-white colour.

They were alive, and their movements very active two hours after the cover glass was dropped on the slide. Every specimen examined gave the same results, and the first thing that struck me was, how many of these embryos had I lost from each section during the washing and staining processes? An examination of the fluids showed countless numbers.

The next thing which surprised me was, how had so many embryos escaped being severed by the section knife, when I calculated that each section could not be the $\frac{1}{1000}$ of an inch thick?

Above all I was surprised, after having subjected the specimens to a temperature a few degrees below zero (Fahr.) for about an hour, followed by

immersion into chilled water, then into an ammoniacal solution which was painful to my own eyes and nose, from this into strongly acidulated water, next into a poisonous solution of arsenious acid, and, finally, having hermetically sealed them under a cover glass, to find the embryos alive, their movements being frantic in the extreme. I watched them for hours till sleep overpowered me, thus preventing me from seeing their last movements.

I kept no strict memorandum of time, except the five minutes' immersion in the staining fluid ; but the whole process, from beginning to end, as I have described, occupied about eighteen consecutive hours.

More than twelve months have elapsed since I cut the above-mentioned sections, and since that time I have had ample opportunity of getting the same results ; I have done so over and over again, to try and prove that in the first instance I must have been mistaken. I have as yet failed to do so, and, whilst conducting the practical pathology class in Dick's Royal Veterinary College, I had the satisfaction of being able to give every member a specimen of the above description. So much for the embryos in the meantime, and now let us see where they come from. To solve this question we must necessarily examine its parent "the adult worm." On procuring a mass of strongyles from a bronchus one has no difficulty in finding a female; the males, however, are not so plentiful as the females.

On examining the female under the microscope, thousands of ova may be seen in its interior ; some of the ova will show a granulated appearance only ; in others, again, may be seen the more developed embryos coiled up in figure fashion, but not endowed with movements ; in other ova, again, may be seen the embryo writhing about in its eggshell, so to speak ; whilst in another portion of the specimen (worm) may be seen the embryo which have now escaped from their capsule, but are as yet retained within their parent. One of the specimens at present on the table demonstrates this beautifully, with the exception that the embryos are not alive.

These young embryos seen in the female adult may also be seen in any section made through the lung of an infected animal. Their habitat appears to be in the air vesicles, whereas the more fully developed worm is found in the infundibula and smaller bronchi.

A peculiar fact is this, that when an animal such as the lamb is killed by the effects of these parasites, we always find the lungs assuming the appearance of the second stage of Catarrhal Pneumonia, which is caused by the thousands of these embryo being located in the air vesicles, there setting up irritation, and thus causing proliferation, and desquamation of the lining epithelium. Some portions of the lung may show a number of caseous nodules scattered throughout its substance, and this has been likened to tubercle. This caseation is easily accounted for when we remember that all epithelial products are very liable to undergo caseous metamorphosis.

I agree with Mr. Armitage in this, that when these nodules are examined with a 300-diam. objective they are seen to be composed of metamorphosed lung tissue, the centre or nucleus of each nodule being a strongylus ovum, but I must again differ from Mr. Armitage as I cannot look upon these nodules as being one of the different stages of development, through which this parasite has to pass in order that it may arrive at maturity.

I consider these nodules are composed of caseous material, such caseous material being formed around the ovum by the pathological processes of proliferation, desquamation, and, finally, dry fatty degeneration of the desquamated epithelial cells which lined the air vesicles in which the ovum, or ova, were located ; moreover, I consider the above process the best thing that could have occurred as regards the life of the infected animal, because, once an ovum is in this manner encapsuled there is not much danger of it

ever becoming a fully developed strongylus, as it has now become imprisoned and cut off from all source of nutriment. We see this process taking place in many other diseases, notably old-standing Pleuro-pneumonia Contagiosa.

I would ask, (1) If an intermediate bearer is necessary, how is it we always find countless numbers of these parasites in a mature form in the lungs of an animal that is comparatively young, such as the lamb?

(2) Taking into consideration the numbers that are found in the lungs, and assuming that they gain access there by means of the circulation, how is it that microscopic examination of the blood gives negative results as regards the presence of ova?

On microscopic examination we find the living embryo in the air vesicles, we also see it in the adult worm, and we also see it in the ovum, such ovum still being retained within the adult worm—in fact, in every half cubic inch of an animal's lung which has been the subject of Hoose (such half cubic inch showing to the naked eye the characteristic lesion) there is, as far as my observations have carried me, ample opportunity for demonstrating twenty times over all the different stages of the growth and development of this parasite.

The following conclusions may be readily drawn from the foregoing :—

First, these parasites multiply with extraordinary rapidity.

Second, their tenacity of life, especially of the embryo, must be extreme.

Third, infection by one impregnated female is quite sufficient in the course of a short period of time to kill the animal which becomes its host.

Fourth, the inhalation of the ova, provided they gain access to a suitable pabulum, and that the ova themselves are capable of germinating, is sufficient to produce the disease.

I am forced by my own observations to conclude that there is no necessity for an intermediate bearer for the full development of the *Strongylus filaria* or micrurus. I am under the impression that they gain access to the lungs either during the process of rumination, or by inhalation ; my reason for adding inhalation being, that in the human subject (and also in the horse), in cases of Anthracosis and Silicosis, comparatively large pieces of coal and stone are inhaled, and when such a heavy, irritating substance as flint stone dust, every particle of which has its peculiar-shaped angle, can be taken into the lungs by inhalation, I fail to see why such a light and smooth substance as the ovum of one of these strongyles cannot be inhaled also.

I am also of the opinion that if the practitioner looked upon each and every strongylus he sees as being capable of producing death to an animal in a comparatively short period after having gained access to its lungs, it would cause him to be more careful as regards giving instructions for the complete destruction by fire or some other such agent of all lungs found affected.

If this method of prevention were fully and conscientiously carried out, I have no hesitation in saying that in the course of a few years the average mortality of our domestic animals which suffer from this disease would be greatly lessened.

Principal Walley, referring to some pathological aspects of the disease, could not endorse Dr. Cobbold's theory of the earth-worm being an intermediate bearer, nor was it easy to admit the assumptions of those who regarded these worms as intestinal, their habitat being purely and simply the lung. He regarded contaminated grass or vegetable matter as a chief means of spreading the disease. That their development in the lung was most likely was generally admitted, though it must be confessed that at present very little was known regarding the mode of development.

Mr. Cunningham thought these diseases should be as closely looked after as those which came under the Contagious Diseases (Animals) Act—(hear,

hear). The lungs of diseased animals should be carefully done away with, and means should be taken to prevent these ailments from spreading, as now, from one pasture to another.

On the motion of Mr. Rutherford, a vote of thanks was accorded to Mr. Grey for his valuable paper.

THE "PENAL CLAUSE," AND THE "APPRENTICESHIP OR PUPILAGE CLAUSE."

BY THOMAS GREAVES, MANCHESTER.

IN bringing these subjects before your notice my chief aim will be to make the various points as plain and as convincing as possible. I am aware that different members of my profession put different estimates of value on each of these subjects, and in discussing them I will endeavour to deal fairly and impartially with them. First, then, we will consider the

Penal Clause.

This is known in relation to our profession as a clause in an Act of Parliament, whereby we shall have the power to indict before a magistrate any person who assumes the name or title of veterinary surgeon who has not got the diploma of the Royal College of Veterinary Surgeons; such Act giving the power to any magistrate to inflict a penalty of £20, or any other sum which the Act specifies, against any person so offending. At the present time we have no Act of Parliament to inflict a fine or penalty against any person transgressing; it is true we have a Royal Charter of Incorporation, which specifies "that we of all other persons shall be known and distinguished by the name or title of veterinary surgeons;" but there are no penalties attached in this Royal Charter of Incorporation, nor would it avail if penalties were attached, as they could not be inflicted. It was not an oversight on the part of the framers of the charter. There is a vast difference between a Royal Charter of Incorporation and an Act of Parliament; a charter is granted by Her Majesty, giving to the individual, or to a body of men, certain rights and privileges, but the Queen has no power whatever to give a power to a magistrate to inflict a fine or penalty; the Crown lawyers have decided that no charter could confer on us the exclusive title. You will now see how it is that we seek for an Act of Parliament to prevent persons calling themselves veterinary surgeons who are not, by doing which we believe a great wrong is perpetrated against us, at the same time the public are deceived, defrauded, and injured. It would be well if we could extinguish the pretender and the empiric; we do not go so far as to say we shall prevent such men practising. I do not for one moment assume that we can ever accomplish this. I do not believe an Act of Parliament could possibly be obtained with such powers in it, and even if it could, it could never be carried out. As matters stand at present, any man, however ignorant he may be—and in using the word ignorant I do not merely mean ignorant in his general education, but ignorant also in the matter of the treatment of sick and lame horses—can call himself a veterinary surgeon, and who, by calling himself a veterinary surgeon, the public are led to employ him. These dishonest and dishonourable courses we seek to put a stop to. Let him call himself by whatever name he chooses, he must be unmasked, and the public must know that he is an unqualified man. Let us do everything we can to lessen this loathsome fungus quackery. Then the question arises, *How much will the profession be benefited when this is done?* The public will still employ him more or less—aye, and in some cases he will be preferred to the inexperienced though duly qualified men. What then? Will it not be even more humiliating to the duly qualified man than it is

now? The qualified man will not have the excuse he has now, viz., that the public employ him not knowing that he is a non-qualified man. The tug of war will then be, as I have always contended it must be, viz., "*the best man wins;*" and this brings me to the grand and burning question of the day, viz., Veterinary Education. The qualified man with ever so high an education and gentlemanly manners, with all his scientific attainment, if deficient in practical knowledge—if he goes about his horse like a tailor, cannot give a ball or put a hobble on, cannot pare out a lame foot, or even tell with any degree of certainty which foot is the lame foot, I say it with considerable humiliation, but it must follow that the practical though non-qualified man (assuming he is a man of ordinary ability and education, who goes about his work in a workmanlike and horsemanlike manner, although he has "Farrier" on his sign) will beat the qualified man out of the field. We may be giants in science and in theory, yet be babies in practical knowledge. There are hundreds of instances of this kind, in which the educated and qualified man, feeling that he is a failure, quits the profession in disgust, and enters into some other calling more genial to his tastes and the bent of his nature. Had such a one been apprenticed, his inaptitude and utter unfitness for our profession would then have been made apparent, and much of this lost life and expense saved; and these instances will be continued and be repeated so long as our profession exists, unless we make the practical teaching of our rising veterinary surgeons obligatory—to use Mr. Fleming's own words, "Whatever the profession wills to have, in reason, that it will obtain."

In compliance with a petition emanating from the Lancashire Veterinary Medical Association, praying the Council to apply to Parliament for a Bill to protect the name and title of veterinary surgeon, and offering to pay its share of the expenses, and which was duly presented to the Council; also one on the same subject from the Yorkshire Veterinary Medical Society, and one from the Liverpool Veterinary Medical Association; another from the Belfast and North of Ireland Veterinary Medical Association; another from the Midland Counties Veterinary Medical Association; another from the Norwich and Eastern Counties Veterinary Medical Association—all to the same purport, our President felt that a call from such important bodies, being a fair representation of the whole profession, demanded attention, and he got a Bill, intituled "The Veterinary Medical Act," drafted out, and submitted it to the Council. After a careful and deliberate discussion on the various clauses, the Council decided that it should be forwarded in its present form to Lord Aberdare for introduction to the House of Lords as a Government measure. In the Bill, in clause 2, it sets forth—"Any person who shall wilfully and falsely pretend to be, or take or use the title of veterinary surgeon, or any name, title, or addition or description implying that he is a professor or practitioner of the said veterinary art, or that he is registered as a member of the Royal College of Veterinary Surgeons in the manner hereinafter mentioned, or that he has received a diploma, certificate, or authority from the said college, authorising or entitling him to act as a veterinary surgeon, shall be deemed to be guilty of an offence, against this Act, and shall, upon a summary conviction for any such offence, be liable to a penalty not exceeding ———, or to be imprisoned for a period not exceeding———."

The Bill has passed through the House of Lords, and it has been altered in some particulars very greatly; for instance, it has been decided that all those practitioners who have been practising for five years, or longer, shall be entitled to claim to be registered by the Council of the Royal College of Veterinary Surgeons; but although registered in the same register that we are registered in, they will occupy a separate part of the register, and under the heading of *Existing Practitioners*, and have nothing whatever to do

with us or with the college. They must prove to the Council that they are worthy of registration; if the Council refuse them they have the power to appeal to the Privy Council, to which body the Royal College have to send in writing the reasons why they have refused to grant registration. If it is found that the Royal College have refused on insufficient grounds, the Privy Council can order the Royal College to register such individual; but it is considered that such a case will very rarely or never happen. If these practitioners omit to register themselves within one year after the passing of this Act they will be liable to a conviction, and incur a penalty of £20 if they continue to practise. This Act gives us the exclusive right to the title of veterinary surgeon, therefore, from and after 1883 quackery is dead in our profession if this Bill passes. Mr. Fleming says, "This Bill is a splendid one, far better than I ever anticipated; our future is brilliant, is splendid." We hope and pray that it may come out of the Commons none the worse for the ordeal it has to pass through. George Fleming, our President, has worked like a lion for us, and is worthy of all the thanks and honour that our noble profession can accord to him.

I will divide the practitioners of veterinary medicine into three classes:—

1st. Practitioners who possess some practical knowledge, but who have little or no education.

2nd. Practitioners who possess the requisite practical knowledge, and also a good sound English education.

3rd. Practitioners who possess a high classical education, but little or no practical knowledge.

First Class.

Who are these? They are the men who constituted our profession before we had a veterinary college; they were the village blacksmith, the groom, the horse-breaker, and such-like men, almost destitute of education, and occupying the lowest status in society. This is the foundation of the character of our profession; "even at the present day there are vast numbers of men of this class who profess and practise the treatment of our domesticated animals." It has to be admitted that until very lately men of this class have entered our colleges, and some of them have managed to gain a diploma. These men could only associate with men of like education and status in society; the effect of this, so far as it went, was to stamp on our profession the character of a low calling. This was put a stop to, in some measure, during the year I had the honour to occupy the high position of President of the Royal College of Veterinary Surgeons, when the preliminary examination was introduced. The mistakes consequent on the ignorance of the above class were a disgrace to any calling; but in all this there was occasionally observed a silver lining. There were always amongst them a few men of tolerably fair education, and possessing ability and good sense, together with practical experience, and who conducted their business with credit to themselves and with satisfaction to their employers.

Second Class.

Who are these? They are the practitioners who possess a good sound English education; have been thoroughly taught the business of their profession; obtained their diplomas; gone forth to practise their calling with credit to themselves and satisfaction to their employers. I have said they are men who have been thoroughly taught the business of their profession; by this I mean *that they have served an apprenticeship to a veterinary surgeon*—been regularly initiated into the work of the business; then gone to college, and got their diploma. Our forefathers were convinced of the necessity of this course of instruction. Much was said, and well said, by

some of our best and ablest practical men at the time our charter was granted, in 1844, about the advantages of every veterinary aspirant serving an apprenticeship to a veterinary surgeon. There was a rule or bye-law made in the Council at that time, that no student was eligible to present himself for examination by the Court of Examiners unless he had an indenture of apprenticeship showing that he had served three years with a veterinary surgeon. The bye-law ran thus : "No person shall be admitted as a member of the Royal College of Veterinary Surgeons after the 1st of January, 1848, who has not served an apprenticeship of three years to some member of the college in regular practice during the whole of that period." This bye-law broke down in consequence of the students then at the college not being able to comply with its conditions. There was not one at Professor Dick's college, and only four or five students at Camden college. The consequence was the bye-law had to be suspended to meet the case of the students at the colleges and enable them to be examined at all, and it has never again been insisted upon.

At that particular period of our existence the charter had been drawn up by our legal advisers and the parliamentary agent, and all the bye-laws were drawn up and subjected to his supervision. *The legality of our power to enforce this rule was never questioned.* We think at the present moment there is no doubt about it, we have ample powers given us by our charter ; but our President is getting the opinion of the Attorney-General of England on this point. It is now said that the power we possess in rejecting a student at his examination is sufficient ; but let me remind you that our present system has been in existence for thirty-six years and it is proved defective. The examiners are bound to pass the student if he answers all the questions satisfactorily. Mr. Fearnley wishes the Council "to recognise the fact that examinations can never really test the extent and soundness of a student's fitness to practise the craft." Although the examiners occupy about twenty minutes in examining the student on the live horse, and twenty minutes in examining the student on the live cow, sheep, and dog, and they now for the first time make the student put hobbles on the horse and cast him, still much, very much, has to be assumed or taken for granted by the examiner.

Let us now, for a moment, consider this question of a more strict, more searching and thorough testing of the student at the time of his practical examination in lieu of apprenticeship. To fully realise the difficulty, I must tell you it will be necessary to have fifty or more cows calving on the two or three days of the practical examinations ; fifty or more colts to castrate ; fifty or more cases of Neurotomy ; fifty or more cases of Colic ; same number of cases of Spavins or Curbs to be fired, and so on *ad infinitum*, because each student must perform each and every operation with his own fingers, under the immediate supervision of the examiners, to enable the examiners to form an opinion as to his manipulative efficiency. Now I say this must be done if the apprenticeship system is to be still ignored. You will now be able to form some idea and to see some of the difficulties, absurdities, if not the impossibilities, which stand in the way ; and hence it is that the examiners say, and I say, we must be resolute and insist upon it. Let us make it imperative that this additional guarantee of his competency, viz., seeing practice, shall be made obligatory. I maintain that it is the duty, the bounden duty, of every veterinary surgeon in large practice, to be agreeable to take apprentices, and take every care and trouble to instruct such apprentice in his business ; unless the general practitioner does this let us not throw all the onus upon the professors.

One would think, in taking a rational view of this matter, that the professors and colleges would be the first and foremost in demanding this important adjunct to their teaching, since it is to their credit and their honour

to turn out students as perfect and as efficient as possible, instead of as they are now; it will advance the true interests of the profession. Mr. George Fleming speaks most definitely upon this point. In considering this question of examination, let us try to understand it properly in all its bearings; we must not forget this, that the simple act of examination neither adds to nor diminishes the quantity nor the quality of the knowledge the student possesses. Let the Examining Board be constituted as you like, either wholly or in part of men occupying the highest positions in science and the classics, or wholly composed of veterinary surgeons—they do not add one jot or tittle to the student's practical knowledge, his natural or acquired ability, or contribute anything whatever to the securing his success or his eminence in after life. I maintain, then, that his knowledge and high abilities has nothing whatever to do with the examination; but it has everything to do with his natural capacity, and the nature of the teaching he has been subjected to in his youth and at college. Let us not assess at a fictitious importance, or at too high an estimate, either the examination, the college teaching, his education, or his natural capacity separately, but let us consider the matter as a whole, and ascribe to each its due importance. I am fully convinced that eight out of ten members of the whole profession believe that the young man who has been instructed and engaged in performing the duties appertaining to sick and lame horses for three or four years before he goes to college, is throughout life the better for it; it is lasting knowledge—he becomes handy and expert in those duties, gains business habits, becomes familiar with the sights, the symptoms and habits of his patients; everything is plain and easy to him, he performs his duties without noise, bustle, bluster, or trouble; he is diligent in business, he simplifies everything he has to do. That this knowledge or habit, coupled with the instruction given him in anatomy, physiology, and, more or less, chemistry, by his master, prepares him for his college teaching; provided always that such a one has had a good sound English education, and possesses good natural talent, and an aptitude for his profession, it must follow he will be a success. Such an education as this gives him confidence in himself, and creates confidence in the mind of the employers; he feels at home in everything he has to do.

The late Mr. Haycock, one of our greatest veterinary writers, says, "Man is of no value except so far as he is of use;" further on he says, "to train a pupil so as to impart a purely scientific education, would be to educate him wrongly." Again, "Parents are anxious for their sons to possess a thorough knowledge of the science belonging to our profession, hence many of them may be highly educated, and when so highly educated are rarely of use; educate highly in the sciences allied to our profession, and ten to one but the pupil will consider it beneath him to work, and unless he can work with his hands and his head he will prove a disappointment to every one. What the community demands from the veterinary surgeon, and which it will have sooner or later, is knowledge and power on his part to cure disease with precision and certainty where such results are fairly within the bounds of possibility." Again, "Two years of his time should be devoted to the shoeing-forge and the stable: the forge, to learn how to pare out the feet of horses and to nail on the shoes with readiness and facility; the stable, where he may become conversant with the habits of horses, and to feed them with judgment, and by grooming how to handle them with familiarity and confidence; he should obtain a rough general knowledge of the anatomy and physiology of the horse and the cow; he should learn the names of the bones, their relations, the number and variety of joints which they should form with one another; he should

also be ambitious to possess a small microscope and a few chemicals, and by working diligently with them during his spare hours he will gradually acquire a fund of information invaluable to him in after life." Again, "An erroneous belief prevails to the effect that our veterinary colleges are to teach young men a full and complete knowledge of the veterinary art. This belief is wrong in every essential; our colleges are not to teach any such thing, their use and purpose is to teach those laws and scientific principles upon which our art, strictly speaking, is based." They should be expert practitioners before they enter the portals of such an edifice; a mere diploma is valueless, and if he who owns it lacks the knowledge and experience it sets forth, the owner is simply a pretender and an impostor." "A veterinary surgeon should be industrious, temperate, and careful of the means at his command; he should possess a large fund of common sense, and great firmness of purpose; he should be thoroughly truthful in all his business transactions; should have the unfettered use of his head and of his hands; he should be a good sound pathologist, anatomist, physiologist, and microscopist; he should thoroughly understand the art of shoeing horses, and the principles on which the art is based; he should be unceasing in the observation and registration of facts relating to disease; he should know the true relation which exists between the disease he may cure and the means available for cure, and, above all, he should be prompt and decisive in their application; he should rigidly cultivate his powers of observation, especially in what relates to causation; he should possess a retentive memory, and a wide faculty of analogy; he should be able to handle horses and cows fearlessly and effectually, and be dexterous and cool in the performance of all surgical operations necessary to be done upon them; he should be able to perform the most common duties to be done to the horse or cow with the same readiness and facility that an expert groom, a common stable-helper, or a cow-bouger can do them; he should be quiet and respectful in his manner, and discreet with his tongue; he should be able to live coarsely, to dress plainly, to endure great fatigue, and to sleep upon a hard bed." Surely such an education must commend itself to every unprejudiced mind. Such a one is infinitely more likely to reflect credit upon the profession and upon himself, and be a far more useful member of society than the one, however highly he may have been educated, if he has had no opportunity of seeing cases, *or has been indifferent in acquiring practical instruction beyond what he happens to see at college.* It is quite true some young men who are apprenticed and pay a premium are above the ordinary duties in a veterinary establishment; they labour under the fallacy that they can gain the knowledge without the trouble of acquiring it. I know some veterinary surgeons who object to take such apprentices on this ground; they prefer some sharp, intelligent, industrious youth in low circumstances, from the stable, or forge, or other occupation, notwithstanding his education may be deficient, one who willingly performs the duties and is anxious to learn; it is often found that these plodding, intelligent youths, if they afterwards go to college, and get their diploma, make the best men. Have we not Professor Coleman's and Professor Dick's sanction for this statement? They over and over again said that the son of a blacksmith or the son of a groom always made the best veterinary surgeon.

The apprenticeship system is peculiarly, if not essentially necessary in the veterinary profession. This has been advocated by me with earnestness and sincerity for over forty-six years. Every year of that period I have had most convincing instances come before me of the great importance of giving the youth who is intended for the veterinary profession a good sound English education up to seventeen or eighteen years of age. Then, during the next three or four years, get a good groundwork in the business of his profession

in a large practice with an intelligent master. If there is a large shoeing-forge connected to it so much the better, so he becomes acquainted with all kinds of foot cases. The knowledge he gains here only whets his appetite for more, makes him more anxious to receive deeper instruction ; then send him to college for his five terms. Many foolish things have been said by eccentric individuals at times in my hearing, but one of the greatest absurdities ever propounded, which is in itself inconsistent with common sense, is this, to let a youth go straight from school to college ; see no practice, only what he has taught him there, *and that only by precept.* Now I ask you to let us stop here a moment and deliberate upon the situation. It is right we should do. Who are these professors at the different colleges? They are veterinary practitioners like you and me ; some of them have had some experience in practice, some of them have seen little or none. These gentlemen lecture on practice to the students. And what, let me ask, are lectures? It is a system of cramming and grinding, and we all know what the nature and object of cramming and grinding are : it is a means used to instil into the minds of students that special temporary knowledge which will be required of them at and to enable them to pass their examination. It will serve no earthly purpose only this ; the knowledge is placed in the mind in an artificial manner, it is only intended to serve a special purpose ; in most cases it is evanescent, vanishing, and soon disappears for ever. Contrast this with knowledge obtained by a youth working from morning to night amongst sick and lame horses for three years, his eyes, ears, fingers, and feet are taught it and understand it. The knowledge becomes part and parcel of himself ; he cannot forget it in after life if he would ; he has become handy in his work, and has acquired business habits which will stick to him through life. On this point let me remind you that it is one thing to put instruction into the mind of a man ; it is another and greater thing to teach the man how to use that instruction. You must all see the vast difference between college teaching of practice and that taught (by working in it) in a practitioner's establishment. Mr. Fearnley says, and says truly, that college duties and general practice duties are as different as light and darkness. Manipulative skill requires practice, whilst perfection in it implies repeated failure, excusable in a 'prentice lad, but a deadly sin in one labelled "qualified." Some of our teachers recommend that the student shall go first to college, spend one or two sessions there, and then serve an apprenticeship to some practitioner of large practice. I can conceive no greater fallacy than this. Do we not all know a young man so situated is above being taught? *The idea has taken possession of him that he knows it all.* He cannot then stoop to learn the A B C of his business after he has been to college. Thus he skips over (*and never learns it*) one portion of his education, which actual practice teaches, and which is really of more intrinsic value to him in after life than some of that science which he is taught to soar after. Such a one gets his diploma and commences practice on his own account. You tell me he will soon gain experience; but how, let me ask, and at what cost? He will have to fill a ten-acre field with his victims before he has gained sufficient experience to be fit to be trusted with the treatment of sick or lame horses. And these are the men, forsooth! some professors say are the best men!

Our profession is a peculiar profession. There is no calling in life that requires more knowledge of human nature, more tact or policy. It differs in many respects from every other profession. We can ask our patient no question, can gain no clue to the nature of our patient's ailments only by our own close observation. This knowledge, I maintain, can only be gained by the learner spending much of his time in the company of his patient. It is absolutely necessary that he should see every kind of case ; work indus-

triously amongst them ; do everything which appertains to a sick or lame horse with his own hands ; do his own thinking in every case. This entails a vast amount of hard work; it often necessitates long hours in the saddle or in the gig from early dawn till late at night. Thus, in conjunction with the mental training of his master, who directs his mind as to every phase of disease, and shows him how to do everything necessary, he sees and becomes familiar with every change and character of disease ; it habituates his mind and his intelligence to his professional duties. In this way he becomes familiar with the principles of medicine and the principles of surgery, and *it is the only way* he can acquire the special knowledge. This is professional education, and will make him in after life a competent and skilful veterinary surgeon. Book-learning can never give him this special knowledge. It is a knowledge that high classical education can never give him. The youth, however well grounded in French and Latin, will never gain it from those sources. *It is a knowledge more valuable than culture can give.* This is practical instruction, and being thus taught, it is found that such men do the right thing in the right way. They go about their patients and perform all minor as well as serious operations with ease and successfully in a business-like manner and with a practised hand. These, I maintain, are the men who simplify everything, and bring credit on the profession. I care not what pro essors and eccentric individuals say to the contrary, employers feel confidence and satisfaction in them, and a respect for the profession is created and established. I grant you that every one who has served an apprenticeship does not excel ; there are some men of mental deficiencies, but they are far more likely to be the better for it. Mr. Stevenson says that to an "exceptionally intelligent youth a twelve months' pupilage is ample," but even to this youth three years would be better. I have always maintained, both in the council and at the association meetings and in my writings, that to a student thus taught and thus experienced, two sessions at college is amply sufficient. He can learn everything that is necessary of college teaching in that time : a longer period is so much lost time ; its tendency is to make him a worse practitioner. I do not say that he gets into a rule-of-thumb groove, but he gets into a clean-fingered groove which sticks to him more or less throughout his life. The eminence to which a man reaches is in a great measure dependent upon the natural character of the individual's mind. All men with practical minds discourage worthless delusions and scrupulously scientific contentions about the perfectibility of science, neither do they mystify their minds with visionary notions. They study to acquire knowledge of direct practical use ; they show a capacity and willingness to work with both brain and hand. There are some fine intellects in our profession who are so wholly absorbed in the idea of classical education and scientific education in our profession that it would seem they would deride and ignore work ; they deride and ignore the labour necessary to obtain the true knowledge which is specially required in our profession. They dream bright dreams and see great visions of what might be, but who, for the want of the needful labour, pass away from the profession still dreaming.

Third Class.

I now approach the third and last division of my subject, viz, those practitioners who possess a high classical education, but who have little or no practical knowledge. It would seem to be the rage amongst a certain class of educated people to worship anything and everything that takes the name of science ; *it is their idol*, it is the almighty lever whereby we must attain to the highest realms of knowledge. I should say that culture is the possession of that knowledge most appropriate to the condition of the life of

the individual; culture certainly means something quite different from learning or technicalities. Some hold that the man who has learned French, Latin, and Greek, however little, especially if he has obtained the university degree, has been educated. Until recently we could only attain to a higher knowledge through a Latin grammar. Modern literature has changed all this. I make bold to deny that literature and classical education alone is competent to supply the special or veterinary knowledge required in our profession, and further, if carried to an excess, is a mistake and is worse than useless in our profession. Every Englishman has in his native tongue an almost perfect instrument of literary expression, and in his own literature models of every kind of literary excellence. I can understand applied science, which consists in deductions from general principles and observation; no one can safely make these deductions until he has a firm grasp of the principles, and he can obtain that grasp only by personal experience and personal application. The value of practical experience is known only to those who are of mature age, who can estimate it and appreciate it. So great was the importance attached to this, that the Council in 1844 had a bye-law to the effect that "no person entering the Veterinary College of London, or Edinburgh, or such other Veterinary College as may be sanctioned by charter, on or after the 1st January, 1845, shall be admitted a member, or be eligible for examination by the Board of the Royal College of Veterinary Surgeons, until he has attained the age of twenty-one years." And at a late meeting of Council we confirmed a new bye-law that "no student shall receive his diploma until he has attained his twentieth year." Our Charter, we believe, gives us ample power to insist upon this.

But let us approach this question as close as we can. Has the member of our profession who has the advantage, as it is called, of a high classical education, and who has missed practical teaching in his youth, been more successful either at college or in business than others? Does he shine in the profession? Is he taken to be the professor's right-hand man in the clinical work at the college? Does he carry away the medals? Is he preferred as a judge of stock at agricultural shows? Will his scientific thought cause him to excel in the sick-box in a complicated case of chest influenza? I answer no, a decided no; in none of the subjects does he equal, nor can he compete with, the member who is intelligent and has been diligent and seen practice in his youth, provided always that the latter has good common-sense and has had a good English education. Professors and eccentric individuals may say what they will, but I am quite convinced that there is a sort of scientific knowledge, unless qualified with practical training, of no real utility to him in his business. Have we not the convincing evidence of the late Mr. John Wilkinson, and also his successor, Mr. James Collins, showing the lamentable ignorance of educated and gentlemanly men in innumerable instances—gentlemen highly educated and who have got their diploma, but who are utterly incompetent to be intrusted with sick or lame horses. These men are often indolent and indifferent, and are great failures; there is no redeeming feature in them, no silver lining in their case; they soon find their level; they flit about from place to place, doing no good anywhere, being conscious that they are failures, and after living in genteel poverty for some time they quit the profession in disgust and turn their attention to something else. We next find them following the occupation of horse dealer, cab proprietor, hotel-keeper, or possibly a teacher, or canine doctor.

> "The wise and active conquer difficulties
> By daring to attempt them; sloth and folly
> Shiver and shrink at sight of toil and danger,
> And make the impossibility they fear."

It is these men that entail disgrace and disrepute upon the character of our profession ; it is these men who make our profession a laughing-stock to many, a disgrace to the college at which they have matriculated, and cast dishonour upon the Royal College of Veterinary Surgeons for having granted them a diploma. It is they who enable the non-qualified man to live and prosper. I consider it nothing less than absolute ruin to the character of our profession as a useful and honourable calling if this course is continued. In this view Mr. George Fleming is entirely with me. The defect of the present education of the student is inefficiency of practical training. The third session at college, which was intended to be devoted entirely to the teaching of practice, is not attended with the slightest advantage in that respect. I very much question whether three sessions at college by the above class of students are sufficient—nay, my private opinion is, that only in rare cases can the teachers (whether they be professors or private practitioners) ever mould them into useful men. At this very moment the high educational test of the intending student at his preliminary examination at the Royal Veterinary College is found impracticable, and the governors have found it absolutely necessary to make a retrograde movement, and reduce their high standard of education exacted from the student. More than half, if not two-thirds of the students were rejected at the opening last November.

The other night Mr. Collins, the Principal Veterinary Surgeon to the Army, stated publicly in the Council that of the young gentlemen who applied to him for appointments or a commission in the army, *more than half of them* are unable to tell which foot the horse is lame on, and one of them informed him that he had never put a hobble on a horse in his life, and could not do it if his life depended upon it. These men understood the principles of medicine and the principles of surgery, but were in ignorance of the commonest duties in practice. Is this, I would ask, likely to give satisfaction to our employers, or raise the status of our profession? The late Mr. John Wilkinson was always talking of this learned ignorance—the lamentable failures of gentlemen in ignorance of practice. I will give one as an example of all the rest. A gentleman of superior education and manners applied for admission. In conversation, reading, writing, and arithmetic he was faultless ; his knowledge of the principles of medicine and the principles of surgery was entirely satisfactory ; he was then shown a lame horse : the degree of lameness as he trotted past him was so great that Mr. Wilkinson felt somewhat ashamed to let it be looked upon as a test ; but, strange to say, the three sound limbs were severally fixed upon as the lame limb. Then Mr. Wilkinson pointed out to him that on the other foot, a hind one, he had a leather sole on and tow hanging out slovenly, obvious to any one. He was then asked to take up the hind foot ; he approached the horse from behind with hand and arm extended, made straight at the fetlock, when Mr. Wilkinson interposed, and said if he knew no better than that he would not only make a laughing-stock of himself, but would some day, in all probability, get his brains knocked out. Is this, I would ask, the sort of character likely to give satisfaction to our employers, or raise the status of our profession? I remember a very nice, smart, gentlemanly person applying to me for a situation : in conversation I was much pleased with him—well educated, good address, thoroughly conversant with the principles of medicine and the principles of surgery ; he had qualified, and I thought he would be an acquisition to me. I invited him to accompany me to see some cases : first case, one of fever, he made a careful and prolonged examination, and diagnosed very incorrectly. I requested him to administer a draught ; he got the cord in the mouth, head elevated, then he took firm hold of the tongue, drawing it forcibly out of the mouth with the left hand, while at the same time he attempted to pour the medicine down the throat with his right

hand: I interposed. The next case was a lame horse; I took the shoe off, gave exit to some matter, tacked shoe on, and passed on to the next case. I requested him to take off the shoe, a hind one: a quiet, light-bred horse; he said he should be most happy to do so; he then placed the hind foot between his own legs to enable him to unclench the nails; presently the horse made a pitch, sending him sprawling in the gutter, the groom and attendants laughing fit to split their sides at him. Now, I again ask, is this a satisfactory state of things? These are instances of giving theory and science first, and practice last. When they stand up in the battle of life they prove themselves utter failures. I know that the teachers of each college are for this kind of teaching. This no one need wonder at: their cry is, Numbers of students, numbers, numbers. Many of us are quite satisfied that it is utterly wrong in principle. Is it not a ludicrous misnomer to call it efficient teaching? And I would ask this meeting, I would ask the whole of my profession, are the colleges to dominate the profession, or is the profession to assert its power and declare its determination that this fallacy shall exist no longer, and that the apprenticeship system, either voluntary or obligatory, must and shall be carried out for one or more years? Let us be alive to the gravity of the situation, let there be no doubt what is our duty, or about our resolution to perform it; we should think and act all together on this point. I will not put another figure in the above picture, but only relate what a learned professor from the London College said to me at one of the baronet's banquets; getting upon this subject, he observed, "Notwithstanding we have a greater number of professors, and each subject more deeply taught than ever before, I feel no hesitation whatever in saying that we turn out a less percentage of practical men now than we did fifteen years ago." Is this not very unsatisfactory and demands a radical change?

I could name five or more teachers, either present or past, who stood pre-eminent as lecturers; they may be said to be giants each in their knowledge of scientific subjects, principles of medicine, principles of surgery, etc., etc., but in each case the principal of the college at which they were individually lecturing said to me, "You will think it strange, although he is so extraordinarily clever, I cannot send him out to treat the most simple case; he seems as if he could form no idea of what is the matter with his patient." Now I again ask, Is this satisfactory? are we justified in getting a penal clause to protect and support these men in their blunders when they go into general practice?

Mr. Stephenson says "he who cannot hold his own against the poor, illiterate, non-qualified man, is unworthy of protection." The young man who has served three or four years' apprenticeship, working from morning until night amongst sick and lame horses, would not make such blunders. I am more and more convinced that the only way we can arrive at a satisfactory solution of this difficulty is for us to make a hard and fast line: the possession of practical knowledge must be made an absolute necessity. But the colleges tell us these apprenticeship-students are the worst students: this every sensible and experienced man must repudiate. We have seen some instances of what their teaching produces without this practical teaching; but how can it be as they say, that the youth is filled with empirical and antiquated notions, when the apprentice has none but modern works to study, and his master may be fresh from the classic ground of Camden Town, Edinburgh, or Glasgow? He could have instilled into his mind no notions but those taught at the colleges, and besides, he gets the thorough ground work in the business of his calling, is handy in his work, and acquires business habits. But the sad fact remains, and who is to blame for this disgraceful state of things? I say it is not the colleges, it is not the examiners, but the responsibility rests with the Royal College of Veterinary Surgeons for granting diplomas to such men. What concern is it to the

schools, if only the student passes and gets away. I say the profession was not made for the schools, but *vice versa*, and it is for the profession to assert its own authority and insist on it, that in addition to a severer searching practical examination, there must be an apprenticeship education as a sort of adjunct to college teaching, or collateral security that the youth must know his profession practically and efficiently.

I have seen this question put to the vote at several Veterinary Medical Associations, and the answer has always been a large majority, sometimes it was unanimous in favour of the apprenticeship or pupilage system of education. At the late meeting of the Southern Counties Veterinary Medical Association, held at Tunbridge Wells, the vote was unanimous in favour of it, and at the annual meeting of this year there were seven votes against and seventy votes in favour of apprenticeship or pupilage training; and at a late meeting of Council, our President, Mr. Fleming, carried his motion by all but a unanimous vote for one year's apprenticeship as a condition of the student's eligibility to be examined for a diploma, on and after 1884. Surely there is a significance in all this, and I ask, nay, I hope and pray, that the profession will insist that this be faithfully carried out.

We are asked in letters in the October number of the VETERINARY JOURNAL, "Are there no men in the profession whose practice is radically bad?" I answer, Yes, plenty who belong to my first and third class of practitioners, whose example would be worse than useless. Then we are asked, "What is to prevent such men from taking pupils?" I answer, The best of all reasons: *no one would place their sons with them.* Then further on we are found great fault with if we let out the secret to the youth of sixteen or eighteen years old that he will be expected to gain his livelihood by his profession—an enterprise, by-the-by, that few of my third-class practitioners have made themselves conspicuous in doing. These writers seem to think that it is necessary that a great variety of extraneous matter must be mixed up and learned by the student; but I would say to them on this point, as the Great Teacher said to the woman on another point, "Martha, Martha, thou art careful and troubled about many things, but one thing is needful."

AN UNWARRANTABLE INTRUSION.

SINCE the invasion of Cattle-plague in 1865-66, when medical men in this country caused such terrible loss by misleading agriculturists and the public as to the nature of the disease and the means to get rid of it, we have happily had but few occasions to find fault with them for meddling with matters belonging to our profession. As a rule, they are ready nowadays to confess that they know nothing of the diseases of animals, and are generally only too glad to glean information with regard to them. It is universally known, strange though it may seem, that no body of men know less of comparative pathology than doctors, and this ignorance is leading to a strong outcry for the institution of chairs at the universities and medical schools to instruct medical students in this subject. Unfortunately, ignorance does not always act as a deterrent upon certain individuals, whose audacity and lack of professional decency far exceed their acquaintance with matters upon which they presume to give an opinion. One of the most conspicuous instances we ever met with of bad taste, insolence, and ignorance combined has just occurred, and we are certain we are doing the medical profession a service in exposing it, in order that they may sit upon the unmannerly individual; for there can be no doubt he is as ill-bred with members of the medical as the veterinary profession, when he has the opportunity, which we trust is but seldom.

We know nothing of "J. M. Cunningham, Esquire, Surgeon-General with

the Government of India," as he is dubbed in a paper now before us. His name, we fancy, is but little known beyond his own immediate circle—at any rate, we never heard of it, and we know pretty well all the medical men who have done anything to raise themselves beyond the level of dull mediocrity. Therefore if we are now compelled to become acquainted with it, and to publish it to the world, we do not venture to do so in terms of praise, but rather of condemnation, and as a warning to medical men and veterinary surgeons in India who may fall under his criticism. All they have to do is to show how he has behaved in the following instance, and then they will be safe from the effects of his impertinent and offensive remarks.

There is now publishing in this Journal a paper from the pen of Dr. Evans, Veterinary Inspector in India, on the fatal disease called "Surra," which he was specially sent by the Government of India to investigate, and for the report on which he received the thanks of that discovery. As will be seen by his paper, he discovered a worm in the blood of the affected horses, which he believes to be the cause of the disease; and it would appear that the Government of India, from some inexplicable reason, referred his report to this Surgeon-General, or the latter may have offered to give an opinion on it, which is much more likely. However this may be, the opinion was given, and here it is, dated April 20th, 1881 :—

"I do not think that further inquiry by a veterinary surgeon is likely to lead to any useful results. Very few of them have the necessary scientific qualifications. Dr. Evans had them to a much larger extent than usual, but even he was led away to hurried conclusions. It is by no means proved that the parasite he observed is the *cause* of 'Surra,' for it is identical with a parasite which Dr. Lewis discovered in rats, to all appearance in perfect health. Moreover, like parasites have, Dr. Lewis informs me, been quite recently found in the blood of healthy *hamsters* (a species of rat) in Germany. Without much stronger evidence than has yet been adduced it can hardly be credited that the parasite should give rise to fatal disease in the horse, mule, camel, and dog, and yet be harmless in the blood of other animals. It appears therefore premature to say that even a 'clue' has been found to the cause of 'Surra.'

"But although I would not advocate further scientific investigation by a veterinary surgeon, I would strongly recommend practical action being taken to improve the sanitary condition of the places where the horses in frontier stations subject to 'Surra' are kept. Among these improvements may be specially mentioned :—

(*a*) Avoidance of overcrowding. Each horse should have abundant space and pure fresh air.

(*b*) To secure the latter there should be scrupulous cleanliness in surroundings and in the ground on which they stand. This should be dug out occasionally to the depth of two feet, and fresh earth substituted.

(*c*) The water-supply should be improved and made as perfect as possible.

"If these improvements are carried out, much will have been done to prevent 'Surra' and other diseases also. The work does not require a veterinary surgeon, for it can be carried out by the officers and non-commissioned officers of the regiment."

It will be observed that this Surgeon-General has nothing but condemnation for not only Dr. Evans, but the entire veterinary profession, and does not even admit the discovery of the "parasite," as he terms it, in the blood of horses and other animals, though it had never been described in them before, to be of any consequence. Such a man must be as dead to shame as

he is deficient in knowledge and good taste, else he would never have penned such a disgraceful effusion. His presumption and audacity in recommending sanitary precautions which are known to the veriest tyro in India, and at the same time maligning veterinary surgeons, is an example of the kind of individual which one used to meet with in the medical profession rather often in days gone by, but which we had hoped had become extinct.

We would caution the Indian Government against consulting Surgeon-General J. M. Cunningham in veterinary matters, or placing any reliance on his opinion. If it does, there need be no difficulty in predicting what the consequences will be. In this country medical men are no longer consulted with regard to animal diseases: "A burnt child dreads the fire." India will suffer still more if it listens to such men as Surgeon-General J. M. Cunningham.

THE BRITISH NATIONAL VETERINARY CONGRESS.

THIS Congress, held in London on July 20th and 21st, was a brilliant success. Held in the beautiful and commodious rooms of the Society of Arts, the meeting was remarkably well attended by members of the profession not only from England, Ireland, and Scotland, as well as the Army, but also from our Colonies. The presidents of the Southern Counties, Eastern Counties, Midland, Yorkshire, and North of England Veterinary Associations were present, as well as a number of medical men and visitors. The President of the Royal College of Veterinary Surgeons performed the duties of President of the Congress, and the proceedings during the two days were of the most interesting character, and carried out perfectly and methodically, thanks to the excellent arrangements made by the Secretaries.

The Congress excited a good deal of interest in London, and the public press noticed its discussions with much favour and encouragement.

A banquet was held at the Horse-shoe Hotel on the evening of the 20th, at which a large gathering took place, the President in the chair.

Altogether, the Congress proved to be the most successful meeting ever attempted in this country by the veterinary profession, and on this account, as well as the public interest manifested in it and the benefits likely to accrue from it, it was resolved at the last day's sitting to hold a congress every third or fifth year.

After paying all expenses, it is estimated that a handsome balance will be left to hand over to the building fund of the Royal College of Veterinary Surgeons.

A more detailed account of the proceedings must be deferred until our next issue.

NEW MEMBERS OF THE PROFESSION.

AT the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held in London on the 4th July, the following students from the Royal Veterinary College were admitted members of the profession :—

Mr. Chas. J. Vyner	Tufnell Park, London.
„ Wm. F. Barrett*	Wisbeach.
„ H. Redford	Winchester.
„ E. H. Scott	York.
„ A. E. Barlow	Reading.
„ H. H. Roberts*	Kenilworth.

The following students passed their Second Examination at the meetings of the Court of Examiners on 5th July :—

Mr. J. Chaplin.
„ C. H. Williams.
„ A. E. Michell.
Mr. J. J. Dawtrey.
„ Chas. Hartley.
„ D. M. Barry.

The following passed their First Examination at the meetings of the Court of Examiners on the 6th, 7th, and 8th July :—

Mr. J. T. Twiss.
„ S. J. Marriott.*
„ J. G. Parr.*
„ E. H. Hazleton.*
„ C. W. Page.*
„ H. L. Somers.
„ A. J. Proctor.
„ J. V. Daly.*
„ W. F. Shaw.
Mr. E. F. O'Toole.*
„ W. H. Bloye.*
„ G. W. Beck.
„ H. J. Axe.
„ E. P. Evans.
„ T. E. Baker.
„ Robt. Hill.
„ S. J. Blanchard.
„ Chas. Morgan.*

* Marked thus passed with Great Credit.

THE FELLOWSHIP DEGREE OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

An examination for the Fellowship Degree of the Royal College of Veterinary Surgeons took place on July 22nd, when the following gentlemen had the honour of being elected Fellows :—

J. J. Meyrick, Army Veterinary Department.
G. A. Banham, Brown Institute.
E. Stanley, Warwick.
G. A. J. Muir, Inspector, Privy Council, Ireland.

The written questions were as follows :—

Pathology.

1. Give the pathology and pathological anatomy of purulent infection.
2. Describe Diphtheria, its relations to croupous inflammation, and the differences between the two morbid conditions.
3. What is the pathology of so-called Purpura Hæmorrhagica ?

Epizoötiology.

1. Describe the measures to be prescribed, in an uninfected country, against the introduction of Swine-plague and Contagious Pleuro-pneumonia.
2. When were the earliest outbreaks of Cattle-plague recorded, and what was their ordinary geographical course ?
3. How are Canine Distemper, Rabies, Foot-and-Mouth Disease, and Glanders extended over a country ?

Sanitary Science.

1. State what insanitary and dietetic conditions favour the development and spread of the disease known as *Sheep-rot.*
2. State what sanitary remedies you would adopt to arrest the spread of *Pleuro-pneumonia* in cattle.

Dietetics.

1. Give the chemical composition of *beet*, *mangel-wurzel*, and *turnip*, and state their relative merits for feeding purposes.
2. State your reasons for, or against, the use of *cooked food* for working horses.

Surgery.

1. Describe the *ecraseur*, and its advantages and disadvantages in the removal of tumours.
2. Describe the *thermo-cautery* and the *nasal insufflator*, and their uses.

Comparative Anatomy.

1. Describe the general arrangement of the bones of the anterior extremity in mammalia, and state the differences observed in birds.
2. Describe the arrangement of the respiratory organs in mammals, birds reptiles, and fishes.

Physiology.

1. Enumerate the different forms of secreting glands, and give an example of each ; describe the process of secretion, and state by what conditions it may be increased, diminished, or arrested.
2. Describe the origin, distribution, and function of the superior maxillary division of the trifacial nerve.
3. What is the specific gravity of the urine of the horse? State its chemical composition, and point the differences observed in the urine of carnivorous animals.

Therapeutics.

1. What are the therapeutic actions of nux vomica, aconite, and opium? and state the conditions which indicate their administration.
2. What therapeutic measures would you adopt in outbreaks of Influenza among horses and Enzoötic Hæmaturia among cattle and sheep?

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Quarterly Meeting of the Council, held July 1st, 1881.

G. Fleming, Esq., President, in the chair.

Present: Professors Brown, Pritchard, Robertson, and Walley; Messrs. Morgan, Dray, Simpson, Cartwright, Woods, Greaves, Harpley, Taylor, Coates, Dun, Whittle, Cox, Batt, Reynolds, Wragg, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

The Secretary announced the presentations to the Library and Museum:

(1) From the President, "On Human and Animal Variola," and "The Principles of Horse-shoeing."

(2) Also various books and pamphlets from Professors Siegen and Buonsanti.

(3) From Mr. Beckett, of Sheffield, a diseased shank-bone.

On the motion of Mr. Dray, seconded by Mr. Taylor, a vote of thanks was accorded to the respective donors.

Letters were announced from Professor Williams, Mr. Blakeway, and Mr. Gowing, regretting their inability to attend the meeting; and from Messrs. Harpley, Dray, Reynolds, Taylor, Walley, Cox, and Cartwright, acknowledging the honour of their election on the Council.

A letter was read from R. P. Lord, stating that he had lost his diploma and his Highland Society's certificate, and wishing to know if he could be supplied with a duplicate diploma.

On the motion of Mr. TAYLOR, seconded by Mr. MORGAN, it was decided that inquiry should be made as to how the diploma was lost, and as to Mr. Lord's identity.

A letter was read from the Secretaries of the British National Veterinary Congress; and one from Mr. Morgan, giving notice of his intention to move a resolution with regard to the appointment of examiners.

Mr. MORGAN said he thought the subject should have been mentioned in the summons paper.

After some discussion as to whether the proposal would necessitate an alteration of a by-law,

Mr. MORGAN stated that what he wished was simply that the matter should be submitted to the consideration of the Examination Committee.

The diplomas of the following gentlemen, holding certificates of the Highland and Agricultural Society, were signed by the President:—Messrs. H. G. Robinson, W. Fleming, R. Willmot, J. Aitken, jun., J. W. H. Ashe, F. E. Rice, and H. Tait.

The SECRETARY read the Report of the Examination Committee.

The PRESIDENT said the opinions of the principals of the different schools had been obtained with regard to the proposals of the Examination Committee, and there appeared to be very little difference indeed, except as to the number of marks and the date at which the examination should commence. He thought it would be advisable for the Examination Committee to again meet and consider the subject, and report to the next quarterly meeting of the Council.

After some conversation this course was agreed to.

The SECRETARY read the report of the examinations in Edinburgh and Glasgow, and the report of the Finance Committee.

On the suggestion of Professor PRITCHARD, the following instruction was directed to be sent to the Examination Committee:—"That the Examination Committee take into consideration, in the case of a candidate presenting an education certificate, what length of time should elapse between his obtaining such certificate and the date when he presents himself to the R.C.V.S., and further, that such period should not exceed seven years."

On the motion of Mr. WHITTLE, seconded by Professor PRITCHARD, the Finance report was received.

Mr. WOODS proposed, and Mr. BATT seconded, the adoption of the Finance report.

Mr. TAYLOR gave notice that at the next quarterly meeting he would bring forward the subject of the dates at which the functions of the Finance Committee began and terminated.

The report was then adopted.

Messrs. Fleming, Pritchard, Axe, and Coates were re-elected as the Museum Committee, on the motion of Mr. HARPLEY, seconded by Mr. TAYLOR.

Mr. REYNOLDS proposed, and Mr. BATT seconded, the reappointment of the Finance Committee, which was agreed to, and on the suggestion of Mr. Dray the name of Mr. Wragg was added to the list.

The House Committee, consisting of Messrs. Batt, Greaves, Harpley, and Pritchard, was reappointed, with the addition of Mr. Coates.

The names of Mr. Fleming, Mr. Coates, and Mr. Collins having been suggested for re-election on the Registration Committee,

The PRESIDENT said that, in view of future events, he thought the Registration Committee should be increased in number. He anticipated that they would have a good deal of business to attend to in the next twelve months.

The names of Messrs. Robertson, Wragg, Pritchard, Dun, and Simpson were added to the list, and the committee was then reappointed.

Messrs. Axe, Blakeway, Harpley, and Robertson were elected members of the Library Committee.

The Parliamentary Committee was reappointed, with the addition of Messrs. Dun and Simpson.

The PRESIDENT announced that the general examinations would commence in London on Monday, July 4th, and the examinations for the Fellowship about the 21st or 22nd.

Mr. MORGAN asked what fees were paid to the examiners.

The SECRETARY explained.

On the motion of Mr. WALLEY, seconded by Mr. DRAY, Messrs. Fleming, Collins, Duguid, and a member of the College of Preceptors were elected examiners.

The SECRETARY read the report of the Fitzwygram Examination. The first prize was awarded to Mr. W. W. Dollar, of the Clyde Street School.

Mr. MORGAN said he should like to know what the Council had to do with the Fitzwygram prizes. They did not appoint the examiners, and the College ought not to be troubled with the report.

Mr. WHITTLE complained of the manner in which the arrangements for the examination had been carried out.

Mr. HARPLEY said that when General Sir Frederick Fitzwygram first introduced these examinations the Council were aware of the responsibilities, and allowed Sir Frederick to appoint the examiners. If any gentleman objected to the mode in which the examinations were conducted he might give notice, and have the matter fully discussed.

Mr. WOODS said he understood that the Clyde Street School was the only one that knew that the examination was taking place. His own son, who was at Gayfield Square College, had no intimation of it.

The PRESIDENT said the examination was announced in the *Veterinarian* and the VETERINARY JOURNAL.

Mr. WOODS gave notice that he would bring the question forward at the next quarterly meeting.

Mr. WHITTLE asked who fixed the time and made arrangements for the examination in Edinburgh.

The SECRETARY said Sir Frederick made his own arrangements.

The SECRETARY, as Registrar, read the obituary notice.

Mr. WALLEY asked if anything had been done with reference to the question discussed by the Council some time ago as to the pupilage question.

The PRESIDENT said he submitted a case to the Attorney-General some months ago, but that gentleman had been busily occupied ever since. No doubt, however, he would attend to it before long.

Mr. DRAY asked the President if he could give the Council any information respecting the Veterinary Surgeons Bill.

The PRESIDENT said, with regard to a certain case, it was decided that the Attorney-General at the Cape should be written to for the facts, and that the editors of two papers should also be applied to. No time had been lost, because if the opinion of the Cape Attorney-General had been received it would be no use acting upon it at once. However, it had not yet been received. With regard to the Veterinary Surgeons Bill, the Council were aware that it had been presented to the House of Lords by Lord Aberdare, who, on the second reading, did ample justice to the subject. It was very favourably received by Lord Spencer, and, in fact, by the House of Lords generally. The Bill was opposed by the Duke of Marlborough and the Marquis of Salisbury, who appeared to do so on behalf of the Highland Society. The Lord President said that if Lord Aberdare would consent to certain amendments he would give the Bill his hearty support, and it passed the second reading. At a later period he (the President) received infor-

mation that a change was about to be made in favour of unqualified men, and, as there was no time to call the Council together, he wrote to the presidents of the various local associations, to forward petitions. He also, as President of the College, sent a memorial to Earl Spencer, in order to impress upon him the necessity of protecting the title of Veterinary Surgeon. The appeal to the profession throughout the country was received most warmly. Within three or four days all the English associations, except one which did not receive the letter in time,* forwarded petitions, as well as the West of Scotland Society and the North of Ireland Society ; and Mr. Simcocks, as a private individual, received for his petition the signatures of nearly all the veterinary surgeons in Ireland. The Royal Society for the Prevention of Cruelty to Animals also sent in a very urgent petition, begging that the title might be retained. In addition to all this, the students of the Royal Veterinary College sent a petition. The Bill passed in Committee, the Lord President's amendments being reserved until the Bill was re-committed. He (Mr. Fleming), Lord Aberdare, and Prof. Brown had a long interview with Lord Spencer, and, among other matters, urged very strongly upon him the necessity for exempting members of the profession from serving on juries. The Lord President did not receive the proposal very warmly, but Lord Aberdare there and then said that he would introduce a clause in favour of exemption. He (Mr. Fleming) strongly objected to unqualified men being placed on the Register as veterinary surgeons, but one of the first questions asked by Lord Spencer was, whether the College had ever taken any steps to justify its right to the title. Of course the only reply was that it had not. The unqualified men had secured an amount of sympathy and support which was perfectly wonderful, and their appeal had been irresistible, so that the Lord President proposed to put on the Register as members of the Royal College of Veterinary Surgeons those who had practised for five years. Of course it would have been ruinous to give them the designation of "members," and Prof. Brown and he strongly urged the necessity of altering the title. When the amendments were reprinted it was found that the term "licentiate" had been adopted—a term quite as damaging to the profession as that of "member." Everything that could be done was done to prevent this. With regard to the exemption from juries, the amendment proposed by Lord Aberdare was rejected by 19, but he hoped that when the Bill came before the Commons the exemption would be secured.

Professor BROWN said that when the Bill was referred by Earl Spencer to the Government legal adviser he, with the Clerk of the Council, attended the consultation, and the legal adviser, looking at Clause 3, said, "This will never get through the House of Commons : the exclusive title of 'Veterinary Surgeon' cannot belong to any number of persons belonging to a corporate body." The term "licentiate" was put in as the best that could be selected for those men who were not members of the College.

The SECRETARY read the petition which the President had forwarded to Earl Spencer in the name of the Council, and the Bill as it appeared in its present shape.

The PRESIDENT said the period during which the unqualified men must have practised had—on the motion of the Marquis of Salisbury—been reduced from five to three years.

Mr. TAYLOR strongly objected to legalizing a number of farriers, etc., simply because they had been in practice three years. He would be no party to passing such a Bill.

* This society, the North of England Veterinary Medical Association, we are informed by the President, did forward a petition. So that the only Society which did not respond to the appeal was the Scottish Metropolitan.—ED. *V. J.*

Mr. MORGAN said if the Bill became law the College would be entirely under the thumb of the Privy Council. He thought the profession would be far better without the Bill than with it.

The PRESIDENT said the Bill did not deserve the cold water that had been thrown upon it. It conferred immense advantages upon the profession, but the weight of argument in favour of the unqualified men was unanswerable. Two years ago the dentists had a Bill for their protection, and every druggist's apprentice, every apothecary's boy, every cow-leech it might be, who extracted a tooth, was put on the Register : the only distinction between the qualified man who had studied for years and the impostor was, that the one was designated a licentiate of dentistry, and the other a registered dentist ; but they were all put on the same Register. In the Veterinary Surgeons Bill, however, the licentiates were put on another page of the Register. In the case of the dentists 5,298 persons placed themselves on the Register, of whom 483 were qualified dentists, fifty physicians and surgeons practising dentistry, 2,707 dentists without any qualification, and 2,049 druggists and druggists' assistants. The sanction of Parliament which the present Bill would give to the College was a grand thing to secure. Then, with regard to removal from the Register, it had been discussed several times for what causes a name should be struck out. The powers given by the Charter were so very wide that the Council could not act upon them ; but the Lord President had, to a large extent, defined in what cases names should be removed, and by giving the person the right of appeal to the Privy Council he had placed the responsibility on the Privy Council. Then, again, the registration would be very complete, as every registrar of deaths would have to send into the College the name of any veterinary surgeon who died in his district, with the time and place of his death. Unqualified men were now increasing and disgracing the profession ; but if the Bill became law that increase would at once cease. The admission of such men to the Register was left to the Council, who could impose registration fees and demand certain proofs, which might exclude fifty per cent. of them. The Bill would be the death-blow to imposture and quackery, for after the 31st December, 1883, none of those who were not registered would be able to sue in a court of justice for anything they had done in the way of the treatment of animals. For himself he considered that it was a splendid Bill, his only fear being that it might be altered in the House of Commons.

Mr. TAYLOR said he was disappointed with the Bill, because it made concessions to ignorant men, and allowed them to assume a position to which they had no right under the Charter of the College.

Mr. WALLEY approved of the Bill. It was impossible for the College to get all they asked for, and some concessions must be made.

Mr. DUN said, though he was somewhat disappointed in the matter of the short period which a man was required to have practised the veterinary art in order to be entitled to registration, he still considered that the Bill would give the College a sure position, which there was not much prospect of its otherwise attaining. The number of unqualified men who would assume the title of Veterinary Surgeon might be disagreeably large, but a very few years would diminish them, and the members of the College would then become the only recognized practitioners throughout the country. A man who falsely assumed the title of Veterinary Surgeon would be liable to a fine of £20. To whom would the fines go ?

The PRESIDENT said in the Bill as committed the fines were to go to the College, but that was now altered.

Professor BROWN said the Treasury made the alteration. The expenses of prosecution would be borne by the county.

Mr. BATT said the Bill gave the College quite as much as he expected it would.

Mr. HARPLEY said even the Royal College of Surgeons had to take in all the men who were practising as surgeons and physicians from 1815. They found it to their advantage to agree to that, and surely the Royal College of Veterinary Surgeons ought to act in a similar manner. It would be a great mistake on the part of the Council not to go on with the Bill.

Mr. SIMPSON also recommended that the efforts to pass the Bill should be continued.

Mr. HARPLEY moved "That this Council highly approves of the Bill as at present before the Council."

Mr. GREAVES seconded the motion. Though the Bill did not give all that he could wish, it was the best that could be obtained, and therefore he thought it should be proceeded with.

The motion was agreed to.

Mr. DUN suggested that influence should be brought to bear upon Members of Parliament through the different Farmers' clubs.

Mr. ROBERTSON approved of Mr. Dun's suggestion.

The PRESIDENT said that he had already taken proceedings in that direction. In addition to that, as the Bill was introduced under the auspices of the Royal Society for the Prevention of Cruelty to Animals, all the members of that Society in the House of Commons would be asked by circular to support it.

Mr. WHITTLE proposed, and Mr. WHALLEY seconded, a hearty vote of thanks to the President and Professor Brown for their exertions in connection with the Bill.

The motion was agreed to, and the proceedings then terminated.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

A SPECIAL meeting of the Society was held at the Queen's Hotel, Leeds, on Saturday, the 18th June, the President, Mr. J. H. Ferguson, in the chair. The following members were also present ; viz., Messrs. M. E. Naylor, J. S. Carter, J. W. Anderton, C. Patterson, Peter Walker, Parlane Walker, J. E. Scriven, W. G. Schofield, J. Tatam, and the Secretary.

The business before the meeting was the propriety of petitioning the Privy Council in aid of the clause "restricting the use of the title Veterinary Surgeon to members of the Royal College of Veterinary Surgeons and the holders of the certificate of the Highland Agricultural Society." After some discussion, it was unanimously resolved that a petition from this Society be forwarded to Earl Spencer requesting his support to the Bill as suggested. The petition was signed, either personally or by proxy, by almost every member of the Society, also several friends, M.R.C.V.S. The receipt of the petition was acknowledged by Mr. Peel, Clerk of the Privy Council ; also by Mr. Fleming, President R.C.V.S.

The usual summer quarterly meeting was held at the Queen's Hotel, Leeds, on Tuesday, the 12th July, the President, Mr. J. H. Ferguson, in the chair. The following members were also present ; viz., Messrs. Jas. Freeman, T. Greaves, J. S. Carter, J. W. Anderton, J. Tatam, Peter Walker, J. Atcherley, W. G. Schofield, W. Lodge, John Nettleton, H. Snarry, Jos. Freeman, G. E. Bowman, T. C. Toop, and the Secretary.

Apologies for non-attendance were received from Messrs. E. C. Dray, Jno. Freeman, J. M. Axe, F. Danby, and B. Smith.

The minutes of the previous quarterly meeting, and also of the special meeting, were read and confirmed. Mr. T. C. Toop, M.R.C.V.S., was nominated for membership.

The SECRETARY hoped the members would heartily support the Veterinary Congress. After some discussion regarding the very small objections entertained in some quarters to the exclusion of the certificated veterinary surgeons, and to the amount of the entrance fee, nine members paid their entrance fee.

The all-absorbing topic of the Veterinary Surgeons Bill was introduced by the SECRETARY, who read a letter that he had just received from the President of the College, stating his opinion upon the Bill as now amended by the House of Lords.

Considerable discussion took place regarding the admission of farriers, grooms, castrators, and cow-leeches under Clause 15, Messrs. Nettleton, Lodge, and other gentlemen being afraid that the country was about to be flooded with these pseudo veterinary surgeons.

Mr. NETTLETON said the clause admitting quacks of five years' standing ought to be strenuously opposed.

Mr. SCHOFIELD and other gentlemen thought the words "licentiate of the Royal College" ought not to be granted to these men.

Mr. GREAVES made some remarks upon the early compiling of the clauses of the Bill, and proceeded to explain that the Privy Council and the Council of the R.C.V.S. would enforce certain regulations as to the reputation, character, and general conduct of these candidates before granting them the certificate to practise as veterinary surgeons.

The SECRETARY suggested the substitution of the words *ten years* in lieu of *five years*, in Clause 15 (1), and

Mr. TATAM suggested adding the words after veterinary surgeons, "and has assumed the title of Veterinary Surgeon."

These alterations appeared to meet the views of all the gentlemen present; and a resolution, proposed by the SECRETARY, and seconded by Mr. ATCHERLEY, was unanimously adopted, recommending the Council of the Royal College to give their due consideration to these questions.*

Mr. LODGE exhibited the bones of the neck of a pony which had been cast in its stall, causing laceration of the ligaments of the second and third cervical bones, followed by osseous deposition. He also exhibited a specimen of peculiar disease of the mucous membrane of the bowels.

The subject of the best treatment for Purpura Hæmorrhagica was introduced by Mr. JAS. FREEMAN. Messrs. GREAVES, TATAM, and TOOP expressed their views upon the subject.

Mr. NETTLETON related a case of amputation of the fore leg of a heifer below the knee, applied an artificial leg, and the animal has quite recovered. Has been successful in treating two or three fractures in the horse.

The treatment of capped elbow was introduced by Mr. TATAM. Had operated upon a big draught horse lately. The wound was unhealthy, with a fungoid growth.

Mr. GREAVES said he had amputated several of these tumours; and where fungus sprung up he recommended the application of Potassa Fusa freely to the diseased surface.

Mr. SCHOFIELD related three cases of disease in mares about the time of parturition. There was enormous swelling of vagina, with inability to rise, etc. Two cases were down upon my arrival, and died in a few hours. The third case was upon her legs when I saw her. I kept her in that position, and she foaled all right, and thoroughly recovered.

* Clause 15 (1): "Where, at the passing of this Act, any person practises and has continuously for not less than *ten* years next before the passing of this Act practised veterinary surgery in the United Kingdom, but is not on the Register of Veterinary Surgeons, *and has assumed the title of Veterinary Surgeon*, he shall be entitled," etc., etc.

Messrs. CARTER and NETTLETON had seen similar cases. Had administered powerful stimulants, and the cases recovered.

Mr. JNO. NETTLETON has kindly volunteered to read a paper for discussion at the next meeting. W. BROUGHTON, *Hon. Secretary.*

THE NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

ON Tuesday, July 5th, 1881, the Norfolk and Eastern Counties Veterinary Medical Association held the usual half-yearly meeting at the Norfolk Hotel, Norwich, A. H. Santy, Esq., F.R.C.V.S., President, in the chair.

H. J. Cartwright, Esq., F.R.C.V.S., and Thos. Greaves, Esq., F.R.C.V.S., were present as visitors; and amongst the members present were Messrs. F. Low, Norwich; G. G. Whincop, Norwich; W. Shipley, Great Yarmouth; H. Newson, Beccles; E. Barker, St. Faith's; J. H. Carter, Litcham; A. G. Banham, Wandsworth; J. E. Anger, Wymondham; J. Hammond, Bale; W. J. Bower, East Rudham; J. K. Gooch, Holt; J. Hammond, jun., and J. D. Overed, Blofield (Hon. Sec.). Letters regretting their inability to attend were received from Gen. Sir F. Fitzwygram, Bart.; George Fleming, Esq. (President R.C.V.S.), and others.

The treasurer's accounts and the minutes of the last meeting having been received and adopted, the following gentlemen were unanimously elected members of the association: Mr. W. H. Hinde, M.R.C.V.S., Downham Market, and Mr. A. Willows, M.R.C.V.S., Norwich.

The PRESIDENT then addressed those present as follows:—Mr. Vice-President and Gentlemen, in opening this our seventh meeting since the resuscitation of the Norfolk and Eastern Counties Veterinary Medical Association, I think you will agree with me that we have good cause for congratulation. We have proved ourselves to be a power, however small. The present worthy president of our profession is our especial nominee. Many things suggested by us some years since for the good of veterinary science have now become realities, and others are rapidly tending in that direction. I refer to certain clauses in the Contagious Diseases (Animals) Act, the Penal Act, and the Apprenticeship Clause. As a body we have been appealed to to raise our voice in support of our just claim to the title of "veterinary surgeon," and which has been so unjustly filched from us by pretenders and others. Acting on your behalf, the Hon. Sec. and myself, at a moment's notice, memorialised Her Majesty's Government, through Earl Spencer, that the Veterinary Surgeons Bill of 1881 might pass in its entirety, or at least without being so mutilated in Committee as to become useless and inoperative. Some of the resident nobility, and the members for the city and county, have also been interviewed, urging them to support the Bill, and to use their influence on our behalf. There are many clauses in this Bill which would afford us ample subject for discussion, but we have not the time at our disposal; and my object in submitting these facts is to acquaint you with everything that has been, or is being, done by us on behalf of the association, and which we trust you will approve. I believe our association is doing good in other ways, by binding its members closer in one common brotherhood, and showing that no man should live for himself only, but for others also. Thus I think it most necessary that those who are at present outside its pale should be brought in, while the present members should double their efforts to promote the objects of this association by writing, or otherwise communicating, facts and matters of practical interest to their brethren, and so to benefit the profession generally. I feel certain that I am expressing the sentiments of every individual present by conveying our heartfelt thanks to Geo. Fleming, Esq., the present dis-

tinguished head of the veterinary profession, for his untiring zeal in promoting its best interests, and especially his noble efforts to ensure the passage of the Veterinary Medical Bill through the Houses of Parliament in such a form as to make it a reality and a lasting blessing to all concerned.

The President then requested his warm and attached friend Mr. Greaves to read his paper on the "Penal and Apprenticeship Clauses," which had been so well received in other parts of the kingdom.

The paper proved to be a very elaborate and interesting one; its reading was listened to with marked attention, and at its close an animated discussion followed, in which the President, Messrs. Cartwright, Banham, Shipley, Carter, Hammond, Whincop, and others, took part, all concurring in the main with the views of the essayist; and when, at the request of Mr. Greaves, the President put the question, yea or nay, every hand was held up in favour of it.

The subject of the British National Veterinary Congress, to be held in London on the 20th and 21st inst., was next introduced by the President, in favour of which he spoke strongly as being a step in the right direction, and calculated to promote the best interests of the profession, which he believed they all had at heart. Mr. Overed (the local secretary) would be glad to receive subscriptions in aid of the Congress, and to give any information in his power respecting the same. He (the President) intended to be present at the Congress sittings, and he should feel much gratified by seeing their association well represented there, when he felt sure they would receive a hearty welcome.

The proposed alteration in the Veterinary Surgeons Bill was next considered, which the members present strongly protested against; but as they have every confidence in Mr. Fleming's loyalty and judgment, they felt it would be best to leave the matter in his hands, feeling sure he would obtain the best terms possible for them.

A cordial vote of thanks was then accorded to Mr. Greaves for his great kindness in being present, and for his interesting paper; also to Mr. Santy for his able conduct in the chair. Both those gentlemen suitably acknowledged the compliment, and the meeting terminated by the members taking tea together. JOHN D. OVERED, *Hon. Sec. and Treasurer.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above association was held at the Blackfriars Hotel, Manchester, on Wednesday, July 6th, 1881.

A. LAWSON, Esq., President, in the chair.

Present: Messrs. T. Greaves, P. Taylor, T. Taylor, W. Dacre, T. Hopkin, W. A. Taylor, J. B. Wolstenholme, J. W. Ingram, and R. Ryan, Manchester; Professor Steel, T. A. Dollar, London; J. W. Moore and R. Reynolds, Liverpool; W. Woods, Wigan; W. Whittle, Worsley; J. Litt, Bolton; A. M. Michaelis, Stockport; W. A. Briggs, A. Darwell, H. Ferguson, E. Leech, and the Secretary.

Letters were received from the following gentlemen, regretting their inability to attend the meeting: Messrs. G. Fleming, John Lawson, J. Mather and Son, C. W. Elam, J. Howell, H. Thompson, J. Welsby, W. A. Cartwright, and Professor Williams.

The minutes of the last meeting having been read and confirmed, the following gentlemen were unanimously elected members of the association: Mr. James Lambert and Mr. Ashworth. The following gentlemen were nominated for election at the next meeting: Mr. E. Leech, of Worsley, and Mr. J. W. T. Moore, of Liverpool.

The SECRETARY then read copy of petition which the office-bearers

had forwarded, since the last quarterly meeting, to the Right Hon. Earl Spencer, K.G., Lord President of the Privy Council, in regard to the "Veterinary Surgeons' Bill" now before Parliament.

Mr. PETER TAYLOR proposed a vote of thanks to the office-bearers for the trouble they had taken with respect to the above. Seconded by Mr. T. A. DOLLAR, and carried.

Mr. E. FAULKNER then read the correspondence with regard to the "British National Veterinary Congress." In the discussion which followed members were still of opinion that the rule in reference to the Highland and Agricultural Society's graduates was very objectionable, and, in accordance with the resolution passed at the last quarterly meeting, the committee have resigned, and the present meeting unanimously confirms the resolution.

Mr. J. H. STEEL said he was in hopes the Congress would yet be a grand success, and that it would be truly a national one. We have representatives from England, Ireland, and some parts of Scotland, and very likely Australia, Canada, and the Continent. He was very sorry to hear the decision of this meeting, and had special reasons why he did not wish for the opposition of the Lancashire section. The Central Committee had in no way intended to slight the members of the Highland and Agricultural Society, but, in fact, given them a place of honour, same as given to medical men—viz., that as guest, and all who attends as such shall be cordially received. I hope the Lancashire Veterinary Medical Association will modify its views, and join us even at the last, and give us a continuance of the support which you gave us at the commencement of the movement.

Mr. T. TAYLOR proposed that the ordinary business of this meeting be postponed, so that the members could have an opportunity of fully discussing the Veterinary Surgeons' Bill, at present before Parliament. Seconded by Mr. W. DACRE, and carried.

A very animated discussion followed respecting the above Act, the majority of members being quite in favour of the Bill, as amended in Committee (a copy of which was kindly brought by Mr. Dollar), a material alteration being made in section 15, clause 4, being as follows: "The names of the persons registered under this section shall be placed in a separate division of the Register of Veterinary Surgeons under the heading '*Existing Practitioners*,' but no such person shall be deemed to be a member of the said Royal College within the said Charters or this Act."

Some members took exception to the retrospective period, considering five years much too short a time as qualifying persons to be registered, and the following resolutions were unanimously carried:

Mr. WOLSTENHOLME proposed, and Mr. FAULKNER seconded—

"That this meeting desires to record its appreciation of the services rendered the profession by its Council in the arduous task of promoting the Veterinary Medical Bill in Parliament, and expresses its confidence in the Council during the further stages of the Bill."

Mr. W. A. TAYLOR proposed, and Mr. T. A. DOLLAR seconded—

"That this Society do petition the Parliamentary Committee of the Council of the Royal College of Veterinary Surgeons to secure, *if possible*, during the passage of the Veterinary Surgeons' Bill through the House of Commons, an increase in the 'retrospective period' as qualifying persons to be registered as 'existing practitioners.'"

Mr. PETER TAYLOR begged to thank the members of this association and others who had given him their support and again returned him as Member of Council of the Royal College of Veterinary Surgeons.

Mr. J. B. WOLSTENHOLME exhibited a very good specimen of the "Trichina spiralis."

A vote of thanks to the Chairman closed the proceedings.

SAM. LOCKE, *Hon. Sec.*

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on the 8th July, and on the 12th, 14th, 18th, and 19th the oral examinations of the Royal College of Veterinary Surgeons were conducted within the museum of the College. The membership diploma of the Royal College of Veterinary Surgeons was gained by Mr. John Wright, Troon ; Mr. John Taylor, Cathkin ; Mr. W. D. Hunter, Meikleour, Perthshire ; Mr. M. Y. Lees, Glasgow. The second professional examination was successfully passed by Mr. Hayes, Portroe ; Mr. Magill, Hilltown ; Mr. O'Connor, Castle Island ; and Mr. Herron, Stirling. The first examination was passed creditably by Messrs. Johnson, Belfast ; Reid, Magheramore ; Ross, Ballymena ; Tweedley, Barrhead ; Frazer, Largs ; Craig, Glasgow ; Laithwood, Congleton ; Spalding, Blairgowrie ; Carnachan, Stranraer ; Marriott, Warwick ; M'Nair, Helensburgh ; Weir, Coll ; Scouller, Kippen ; Holland, Dublin ; Gregor M'Gregor, Kippen ; and Larkin, Carlingford. Medals granted by the Highland and Agricultural Society of Scotland, Principal M'Call, and certificates of merit granted by the College were awarded in the different branches of study as follows :—

Botany.—Silver medal—Mr. Robert M'Nair. First-class certificates—Messrs. Laithwood and Tweedley. Second-class certificates—Messrs. Jones, M'Millan, and Anderson.

Chemistry.—Silver medal—Mr. Laithwood. First-class certificates—Messrs. Anderson, Holland, and Marriott. Second-class certificates—Messrs. M'Nair and Jones.

Materia Medica.—Silver medal—Mr. Williams, Portmadoc, Wales. First-class certificates—Messrs. Laithwood and Gibson. Second-class certificates—Messrs. Jones, Reid, Holland, and Tweedley.

Best oral examination on Botany, Chemistry, and Materia Medica.—Gold medal, Mr. Holland.

HIGHLAND AND AGRICULTURAL SOCIETY.

A SPECIAL meeting of the directors of this Society was held at Edinburgh, on July 6th, Mr. Dingwall, Ramornie, in the chair.

The SECRETARY (Mr. F. N. Menzies) stated that, in accordance with the resolution at the last general meeting, the Earl of Mar and Kellie had presented the petition and given notice of the necessary amendment on the Veterinary Surgeons' Bill, introduced into the House of Lords by Lord Aberdare. The Marquis of Lothian agreed to second the amendment, and the Duke of Buccleuch and a great many of the Scotch peers were prepared to support it. Lord Aberdare and the Lord President, however, agreed to accept the amendment, and in the Bill, as amended in committee on recommitment, the holders of the Society's veterinary certificate are duly recognised as veterinary surgeons. By an amendment introduced by the Earl of Camperdown, the Royal College of Veterinary Surgeons is bound to make provision in the manner permitted by their charters for the examination in Scotland of the students attending the several Scotch colleges, and to admit and register such students as have passed the examinations as members of said Royal College, under the provisions of such charters and this Act.

Parliamentary Intelligence.

House of Commons, July 1st.

VETERINARY PORTAL INSPECTORS.—Mr. HEALY asked the Chief Secretary to the Lord-Lieutenant of Ireland on what principle veterinary portal inspectors were appointed by the Lord-Lieutenant in Ireland; whether any persons were appointed who were not members of the Royal College of Veterinary Surgeons; and whether, in appointing inspectors to the local authorities under the Contagious Diseases (Animals) Act, 1878, a qualified man (as above) was always appointed in preference to one non-qualified.

Mr. FORSTER said the Lord-Lieutenant could dispense with the qualification of membership of the college under special circumstances.

House of Lords, July 5th.

VETERINARY SURGEONS' BILL.—The report of amendments to this Bill was agreed to.

House of Lords, July 7th.

VETERINARY SURGEONS' BILL.—This Bill was brought up for third reading, and passed.

House of Commons, July 11th.

ARMY VETERINARY SURGEONS.—Major O'BEIRNE asked the Secretary of State for War whether certain actuarial calculations, bearing upon the reconsideration of the Army Veterinary Warrant of 1878, and which the late Secretary of State for War stated in the House of Commons on the 7th August, 1879, were necessary in order to enable him to form an opinion as to the necessity of altering the terms of the Warrant in question, had been completed, and, if so, had he come to any conclusion as to the reasonableness of the complaints of army veterinary surgeons as regards the operation of the Warrant of 1878, and if it was contemplated to modify the terms of the present Warrant, so as to remove the disabilities complained of?

Mr. CHILDERS, in reply, said he found that the actuaries' calculations to which he referred were completed in September, 1879, but that after considering them the late Government determined not to alter the Warrant of 1878.

House of Commons, July 12th.

VETERINARY SURGEONS' BILL.—This Bill was read *for the first time*, being introduced by Mr. Mundella, Vice-President of the Privy Council.

House of Commons, July 18th.

The Veterinary Surgeons' Bill was read a second time.

House of Commons, July 22nd.

VETERINARY WARRANTS.—Major O'BEIRNE asked the Secretary for War whether he would consider the grievance of officers who were induced to enter and remain in the service under the conditions of the Veterinary Warrant of 1859, and find their position and prospects altered to their disadvantage by the terms of the Warrant of 1878.

Mr. CHILDERS said: I have to point out to my hon. and gallant friend that there is a great difference between being eligible for, and being entitled to, a particular rank. It is true that the Warrant of 1859 made veterinary surgeons eligible for the rank of captain after five years' service; but, as a matter of fact, vacancies were not taking place in 1878 which admitted of promotion within double that time, and before long no veterinary surgeon would probably have become a captain under seventeen years' service. The

Warrant of 1878 gave them rank absolutely after twelve years' service. The whole arrangements about veterinary surgeons had been so recently settled by my predecessor that I have been reluctant to reopen the question this year; but I will look into it during the autumn, especially with reference to relative rank.

Army Veterinary Department.

Gazette, June 28th.

VETERINARY DEPARTMENT.—Inspecting Veterinary Surgeon A. J. Owles has been placed on retired pay.

Obituary.

THE death is announced of W. Waugh, M.R.C.V.S., Stirling, Scotland, who graduated in 1846.

We deeply regret to have to report the death of R. L. Hunt, F.R.C.V.S., of Birmingham, whose protracted and serious illness had, however, somewhat prepared us for the sad intelligence. In him the profession has lost one of its most respected, faithful, and useful members. Mr. Hunt graduated in 1843, and was elected a Member of Council in 1860, having been Vice-President in 1858, and again in 1876 and 1878, in the intervening years being Councilman. He held the office of President of the Royal College in 1864-5, and from 1872 to 1877, when he was seized with the illness which ultimately carried him off, he was an examiner in the English and Scotch sections of the Examining Board. Genial in disposition, courteous in manner, and ever devoted to the best interests of the profession, our deceased colleague was highly esteemed for his integrity, honesty of purpose, and all those qualities which rendered him a worthy representative of our body.

Correspondence, etc.

THE PATHOLOGY OF NAVICULAR DISEASE.

SIR,—At a meeting of the Southern Counties Veterinary Medical Association, reported in the July number of the VETERINARY JOURNAL, Mr. G. Fleming, the President, produced a specimen of Navicular Disease* in support of his views that the disease commences in the bursa which covers the posterior surface of the bone; and he contends that Navicular Disease commences on the surface of the navicular bone, and not in the interior of the bone itself. Mr. Fleming states his reasons to be as follows:—That in the Navicular Disease, unless it is extremely advanced, we find the articular cartilage healthy; we never find the two surfaces of the bone involved, but we always find the surface that is in contact with the tendon implicated. If it began in the interior, we should have the articular surface of the bone and cartilage involved. When you have the whole tissue of the bone involved you have the articular surface: it is only in the very advanced stage you have this surface diseased. Mr. Martin supports the President's views, and states that he has several specimens in which the tendon is attached to the under-surface of the bone, and in which there is no disease whatever in the internal parts. Mr. Barford also corroborates the President, and is perfectly convinced that the disease commences in the synovial membrane; also states that where he has found caries in one instance, he has found inflammation of the synovial membrane in twenty or thirty.

* This was of traumatic origin, though the lesions were identical with those of so-called Navicular Disease.—ED. *V. J.*

As my opinion differs entirely from the above-named gentlemen's, I ask the favour of being allowed to state it. About twelve years since I read a paper at a meeting of the West of England Veterinary Medical Association, on Navicular Disease, and illustrated my views by producing nearly three hundred morbid specimens, the whole of which had been dissected by myself or under my own superintendence, and the history of a great many of them I knew well. Since that time I have taken every opportunity of examining new morbid specimens, and have not seen anything to induce me to alter my views in the least. Some years since the opinion was almost general that the disease commenced in the synovial membrane covering the cartilage; however, that cannot be, as there is no synovial membrane covering articular cartilages, and ulceration almost invariably commences about the centre of the navicular bone, and the same holds good as to ulceration of other joints; consequently, it is not near the synovial fringes which are situated around the edges of joints. Another important point to be recognized in the consideration of disease of this joint is that there is no primary disease of the articular cartilages, for pathological anatomy teaches us that all changes that are found in it are secondary to some other affection of the bone. There is no such thing, therefore, as primary ulceration of the cartilages. When cartilage is diseased it is from the extension of mischief from the bone beneath. Articular cartilages are not vascular: they are nourished by cell imbibition.*

The first stage of Navicular Disease, whether it be hereditary or from other causes, is that of congestion of the vessels of the cancelli of the bone, and it may be so slight as to quickly pass away after a little exercise; but if the same cause be still in operation, the congestion will be renewed, until a low form of inflammation is set up, and the nutrient properties of the bone interfered with, as well as the secretion of synovia. This stage of the disease causes an aching pain, which interferes more or less with the action of the animal, depending on the degree of the inflammation. Now this state may exist for months with but slight altered action, or lameness, and that of an intermitting character. If the disease progresses, there will be softening and enlarging of the cancellated structure of the centre of the bone, where the nutrient action is lowest; the cells break up, absorption takes place, producing the first stage of molecular death, or what is termed dry caries. In some cases this process goes on until a considerable portion of the internal structure of the bone is destroyed, without producing any granular degeneration of the articular surface of the cartilage.

But much more frequently this perverted nutrition of the bone produces granular degeneration, first of the natural cartilage cells which are embedded in the hyaline matrix, and secondly of the hyaline matrix itself. Let a cartilage cell undergo this granular degeneration, and the granules, by accumulation and multiplication, form a cavity in the hyaline matrix; then let this cavity burst on the surface of the cartilage into the joint, and an excavation which can be seen by the naked eye is at once visible, and a

* Our correspondent is in error if he supposes we consider the surface of the navicular bone in contact with the perforans tendon to be covered by articular cartilage. It is not, but the two surfaces articulating with the os pedis and os corona are; and this constitutes the difference in the seat of the disease. The infero-posterior surface of the bone—that primarily involved in Navicular Disease—is covered by fibro-cartilage, which is liable to disease like fibro-cartilage covering bones elsewhere; while the two articular surfaces, which are never involved until the whole mass of the bone is implicated, are covered by hyaline cartilage. This peculiarity makes all the difference in the pathology of the malady, which, we have always maintained, commences in the bursa, and nowhere else. This is not a joint or articulation, properly speaking, and the cartilage is not hyaline.—Ed. *V. J.*

so-called ulcer is produced. In an early stage of the disease this granular degeneration may only be detected by a microscopical examination ; yet in that early stage the microscope will always detect a spot of degenerated change taking place in that part of the tendon which has been in opposition to the ulcerative spot of the cartilage, producing a gelatinous degeneration of the fibres, or a kind of dry ulceration, which has often been mistaken for laceration, the result of sprain and friction. A yellowish plastic matter is now often thrown out, which unites those fibres of the tendon which have undergone the degenerative change with the diseased structure of the cartilage. In some cases only a few fibres become attacked ; in other cases the entire articular surface of the bone and tendon become firmly adherent, producing an anchylosed joint, after which the pain is much lessened ; but the animal goes in a very stilty manner, and not fit to go out of a walking pace. In some cases the degenerative change goes on in the tendon without the plastic process being set up, until there is not one-half of the articulating part of it left ; yet it seldom becomes ruptured unless the nerves are divided.

I have many specimens showing where nature has repaired a large amount of disease of the cancellated structure of the bone by an effusion of lowly organized lymph, which gradually becomes converted into bone of a porcellaneous character. Cartilage, when diseased, has not the power of regeneration : the small spicula on the articulatory surface of the cartilage is the result of the reparative process of the bone. In my investigation I have not found a case where the commencement of the disease was not clearly traceable to the bone.

Yours truly,

Bath, *July 6th*, 1881. THOMAS D. BROAD.

THE VETERINARY DEPARTMENT IN AFGHANISTAN.

DEAR SIR,—May I venture, through your columns, to call attention to the treatment the veterinary officers have received at the hands of the Government and military authorities during the late Afghan campaigns ?

Although some few members were mentioned by the generals under whom they served, and it was universally admitted that no body of officers more thoroughly and satisfactorily fulfilled the arduous duties imposed upon them, yet when the time arrived for some public acknowledgment of their services the Veterinary Department found themselves entirely ignored.

So far has this principle of avoiding all mention of the department been carried out, that even in the final despatches of his Excellency the late Commander-in-Chief in India, when all branches of the service were especially mentioned and complimented on their good services during the campaigns, the members of the Veterinary Department alone received no single word of praise or thanks. This pointed omission would convey to most minds the idea that we have been unworthy of having our services in any way recognized. If this be not the reason for our exclusion—which it certainly is not, if the testimony of general and commanding officers be worth anything—then why, in common with our brother officers, should our services not receive due recognition ?

It may not be generally known what responsible duties fall to the veterinary surgeon while on active service. It is mainly on him that the efficient working of the transport depends ; for the transport officers are generally men who know nothing of the work required of them. Instead of being selected for his especial qualifications, the transport officer is often a man who is tired of regimental duty, or of whom his colonel would gladly see a little less, who either volunteers for, or is appointed to the transport, or, as in the last campaign, is a young civilian police-officer, more at home in "running 'em in." These inexperienced men know nothing of the habits of,

or the care necessary for the animals in their charge ; consequently the brunt of the work falls upon the unhappy veterinary surgeon, whose time is greatly taken up in endeavouring to rectify their involuntary blunders. The selection and purchase of transport animals, buying of forage, fitting of pack saddles and other gear, paying and management of large establishments, amounting to thousands of animals and men—as, for instance, the leviathan hospital depôts of Peshawur and Jhelum—are some of the very onerous duties frequently devolving on the veterinary surgeon. Surely, if he is capable of bearing such large responsibilities (thousands of pounds passing through his hands almost daily), he may consider himself entitled to some reward for his services. Even looking at our grievances in a purely pecuniary light, we have not been fairly treated ; for while the transport officer receives from 150 to 600 rupees staff salary *per mensem* in addition to his regimental pay, the veterinary surgeon has to do at least ten times the work without a cent of extra pay. That the duties which fell to the share of the veterinary surgeons during the campaigns were no sinecure is amply shown by the large proportion who, succumbing to the climate and hard work, either died on service or were invalided to the hills or home. Great surprise was felt by all when the Afghan Gazette came out that no name of any veterinary officer appeared therein ; but we were consoled with the idea that they would do so in the supplementary Gazette that was to contain the names of those omitted in the first. This forlorn hope has also failed, and all the fruit of our labours during the two campaigns is *some talk* of two veterinary surgeons being promoted to first class grade. The promotion of two junior officers only, out of the large number who distinguished themselves by their zeal and ability, is but a very poor reward to bestow on the department. Surely a larger number were deserving of the same favour !

The case of the senior officers seems to be almost without remedy. We are told the old story of there being no vacancies to be filled up. Among the other branches of the service the difficulty is tided over by the brevet rank. I would venture to suggest that the same thing might with advantage be instituted in the Veterinary Department. Why not bestow a brevet rank of Inspecting Veterinary Surgeon ? But if it carries with it no extra pay, what will it profit you ? the authorities may ask. In the first place, it would carry a recognition of good services which were considered worthy of notice ; and, secondly, it would secure for the officer on whom bestowed many privileges in choice of quarters, of baggage allowance, and cabin accommodation on board troop-ships, also precedence for promotion as vacancies occurred. These may be small advantages, but they would cost the Government nothing to grant, and would conduce greatly to our comfort when knocking about from place to place, which under the departmental system will be more frequent than ever. Another small favour which might well be bestowed on those officers who have been especially brought to notice for their services in Afghanistan is a remission of all examinations for promotion to next higher grade, and that those officers appointed under Royal Warrant dated 22nd April, 1878 (whose services may be dispensed with on completion of ten years' service), who have served in either of the late Afghan campaigns, might be specially selected for further employment in preference to those who have seen no service, provided they are eligible in every other respect. The Gazette of Afghan honours contains the names of several medical officers who have been made C.B.'s for their services. After the slights and rebuffs our unfortunate department receives from the highest military authorities, it may be considered altogether too presumptuous an idea for me to suggest that some of our senior officers were not quite unworthy of receiving a similar mark of esteem, if only in the person of the Principal Veterinary Surgeon in India, who, we all know, did not spare any personal exertions or shirk ex-

posure to the baneful climate of the Khyber, where so many of our brave fellows have fallen victims to disease, in order to render every aid to ensure the successful working of the transport when so much was depending on it.

I must apologize, Mr. Editor, for taking up so much of your valuable space; but I do so in the hope that those who have both the influence and ability to bring these matters to notice will endeavour to ameliorate the present most unsatisfactory state of affairs. It is very disheartening to feel that, no matter how earnestly and willingly we may fulfil our duties, there is no hope of any other reward than that internal satisfaction which is supposed to accompany the consciousness of duties well performed. While honours, brevets, and decorations have been sown broadcast among all who took part in the late campaigns—even to the Postal and Telegraph Departments, whose very junior officers have been decorated with the Order of the Indian Empire—nothing has fallen to the Veterinary Department, either in the shape of promotion, decorations, the reward for meritorious service, or even in the very generous fifty pounds, instead of the usual hundred, as granted lately to one of our senior officers for his services in South Africa. It is to be feared that in the event of another campaign volunteers for the front will not be so readily forthcoming; and were the slights and indignities which are the daily portion of the department generally known, they would largely tend to deter youthful aspirants from the folly of entering a branch of the service which may well take for its motto the well-known words of Dante, "Vai che entrane lasciate ogni speranza." I am, dear sir, yours truly,

"ECOSSAIS."

CORRECTION.

IN our notice of the Fitzwygram Prizes competition, in last month's Journal, it was stated that the only candidate, Mr. Dollar obtained one-half of the maximum number of marks. We are asked to state that it should have been three-fourths of the maximum.

A large number of communications are compelled to be held over till next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from D. Hutcheon, Cape Colony; T. Hopkin, Manchester; "Ecossais"; W. F. Garside, Paris; H. W. Steel, A.V.D., Woolwich; G. Evans, Ootacomand, Madras; J. B. Mills, A.V.D., India; T. D. Broad, Bath; R. W. Burke, Edinburgh; S. Locke, Manchester; J. D. Overed, Blofield; W. Broughton, Leeds; "Ignoramus"; R. Knowles, Wisbeach; T. Chalwin, Adelaide, South Australia; J. Wilson, Nantwich; C. Gresswell, Nottingham; J. Webb, Bishop Stortford.

BOOKS AND PAMPHLETS: *E. Förniger*, Die Ophthalmoskope in der Veterinär-Medicin; *J. Munk*, Physiologie des Menschen und der Säugethiere; *J. B. Dessart*, Traité de Médecine Legale Vétérinaire; *A. Zundel*, Der Gesundheitszustand der Hausthiere in Elsass-Lothringen; *C. Siegen*, De l'Inspection des Deurées Alimentaires.

JOURNALS, ETC.: *Journal de Médecine Vétérinaire et de Zootechnie; Recueil de Méd. Vétérinaire; Archives Vétérinaires; La Clinica Veterinaria; Wochenschrift für Thierheilkunde; Der Thierarzt; Le Progres Medical; New York Medical Record; American Veterinary Review; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Repertorium der Thierheilkunde; La Presse Vétérinaire; Lancet; Medical Press and Circular; Annales de Méd. Vétérinaire; Archiv für Wissenschaftliche und Practische Thierheilkunde; Field; Mark Lane Express; Medical Times and Gazette.*

NEWSPAPERS: *Bismarck Daily Tribune; Western Morning News; Glasgow News; South Australian Register; North British Agriculturist; Stockkeeper: Modern Society; Pen and Plow; Boston (U.S.A.) Evening Traveller.*

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THE TRANSMISSIBILITY OF DIPHTHERIA FROM ANIMALS TO MANKIND.

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THE transmissibility of certain diseases of animals to our own species is a subject of great, and even of supreme interest and importance, when we consider that the majority of them are maladies of the most serious and fatal character. It is somewhat strange that while man is capable of receiving a number of disorders from different animal species, these receive scarcely any from him; so that the danger of transmission is nearly all on one side.

When I mention Rabies, Anthrax, Glanders and Farcy, Variola, probably a form of Enteric Fever, in all likelihood Tuberculosis, and very possibly Diphtheria—to say nothing of several parasitic disorders due to animal or vegetable organisms—it will be seen that the list of diseases which may be conveyed from animals to man is a formidable one, both in quantity and quality. And what renders the subject still more interesting, is the fact that from time to time another disease is added to the list of scourges we receive from our co-denizens.

Persons who mix much amongst animals are, of course, most exposed to disease from them; but, nevertheless, they who may

* Read before the Epidemiological Society on May 31st, 1881.

have no communication with them at all are not exempt, as the flesh or milk they consume, or the articles or materials of animal origin which they handle, are vehicles by which they may become infected.

Looking to the discoveries made in the past, it is not at all unlikely that we shall find that other diseases whose origin is as yet unknown, or unsuspected even, are derived in some way or other from animals. Tuberculosis is the last disease added to the list of those which may be transmitted—judging from analogy and a few pathological facts—to the human species; and we have now to discuss whether Diphtheria may not also be transferred from animals to man, and if so, by what channel or medium.

The serious nature of this disease, its fatality, its alarming complications and troublesome *sequelæ*, and its appearance oftentimes in an epidemic or epizoötic form, render it worthy of the closest study, and particularly with reference to its origin and prevention.

Diphtheria, or Diphtheritis, as is now well known, is not only a very contagious and infectious disease, but also—thanks to the very careful investigations and experiments of Hüter and Trendelenburg, Nasiloff, Oertel, Eberth, and more recently of Talamon—inoculable, and due in all probability to a special parasitic vegetable organism, which can be cultivated artificially. This organism has been discovered in the blood, urine, and other excretions and secretions, as well as in the morbid products of the malady, but particularly in the false membranes which form on the surface of mucous membranes, and constitute a very marked and characteristic feature of the affection.

Of the parasitic nature of Diphtheria there can now scarcely exist a doubt. M. Talamon, one of the latest investigators, has succeeded in cultivating the microscopical organisms from diphtheritic matter derived from eight cases occurring in mankind. In the condition of complete development they presented a characteristic mycelium and spores. The former are tubes with partitions, at intervals, from two to five thousandths of a millimetre in length. These, under favourable circumstances, elongate and bifurcate, the bifurcations being characteristic in consequence of their in-

curved branches, like the sides of a lyre. In other conditions the mycelia do not become elongated, although they multiply so as rapidly to cover the surface of the cultivation liquid ; they remain short and assume irregular forms, and give rise to numerous straight rods. The spores are of two kinds, round or oval, which may be termed the spores of germination, and rectangular spores or conidia. The latter characterise the species. They form small rectangles of various sizes, their length being sometimes fifteen thousandths of a millimetre. They may be isolated or united in festoons or zigzag chains. At first homogeneous, they soon become filled with small round granules, highly refracting, and of the size of ordinary micrococci. The round or oval spores are those which, by their elongation, constitute the mycelium. They appear as clear points, from three to five thousandths of a millimetre in diameter, in the middle of a mass of granular material. M. Talamon has inoculated this organism into the mucous membrane of the mouth or nose, or has given it with the food, in six rabbits, two guinea-pigs, four frogs, a fowl, and four pigeons. The rabbits died at the end of six, eight, ten, and eighteen days. That which died soonest presented an enormous swelling of the neck, resembling the œdema of the neck in Diphtheria, and due to a serous infiltration of the connective tissue, and the culture of this serosity showed the same organism with the characteristic conidia. The rabbit which died at the end of eighteen days presented a bilateral fibrinous Pleurisy, with effusion. The effusion and pleuritic membrane also yielded, on culture, the organism which had been inoculated ; and it could be recognised either by simple microscopical examination or by culture, in most cases in the liquid contained in the pericardial and peritoneal cavities, and often in the kidneys. The organism was never obtained by cultivation of the blood contained in the heart. The liquid either remained clear, or presented only ordinary bacteria. In the four pigeons M. Talamon succeeded in producing characteristic false membranes. He first scratched the mucous membrane of the mouth with a bistoury, and then placed some of the cultivated organism in the interior of the mouth. At the end of twenty-four hours a thick membrane lined both sides of the mouth, the tongue, the false palate, and

the back of the pharynx. It was yellowish-white in colour, and was formed like the diphtheritic membrane in man, by epithelial cells, fat, micrococci, and bacteria. There were very few of the rectangular conidia, but these were abundantly obtained from the membrane by cultivation. Two of the pigeons died at the end of three days. In one the entrance to the larynx was covered by false membranes, and the trachea was full of a thick mucus, from which the organism was obtained by cultivation, as also from the pericardial and peritoneal liquids, but not from the blood. The third pigeon remained ill for eight days, and then the false membranes became separated and the animal recovered. At this point, unfortunately, the experiments have been for the present arrested. They were carried on in the laboratory of the Hôtel Dieu, and some of the physicians, fearing lest some of the organisms might contaminate their patients, stopped the observations.*

Diphtheria has been most carefully studied in man, in whom it is generally localised in the fauces, or pharynx, in the upper air passages, in the spleen and kidneys less frequently; it also involves the nervous system. The peculiar greyish-white membrane or slough which marks the presence of the disease, and is so closely adherent to the mucous membrane beneath, is constantly found in the mouth or pharynx, not beyond; for when the larynx and trachea are involved, the pseudo-membrane formed in them is of a croupous nature, easily detached, and does not usually occasion any loss of tissue when removed.

It is only in recent years that it has been closely studied in animals, though it must be confessed that from the comparative rarity of outbreaks, and the anxiety always manifested to avert loss by stamping it out, much still remains to be accomplished in this study.

The greatest number of outbreaks have been observed in poultry, among which, as well as other kinds of animals, it usually appears in an epizoötic form. Among fowls it is most infectious and fatal. After them the bovine species appears to suffer most frequently; then sheep, the pig, rabbit, and, finally, the dog and cat—the horse being almost exempt from its invasion,

* The *Lancet*, April 9th, 1881, p. 589.

according to some authorities, and as liable as the ox, according to others.

In animals, Diphtheritis is, as in man, a general as well as a local disease, and is manifested by acute fever, increased temperature and respiration and pulsation, succeeded by prostration and rapid emaciation, often by sudden collapse: the symptoms varying not only in individuals or species, but in different outbreaks.

In one outbreak, and usually most frequently, the respiratory passages will be chiefly involved—the nostrils, pharynx, larynx, trachea, and bronchial tubes, and even the lungs and pleural membrane being implicated, though the upper air-passages are oftenest the seat of pseudo-membranes. The symptoms in any case are very marked.

In another outbreak the digestive tract will offer the most marked lesions. The buccal, labial, lingual, pharyngeal, and palatine mucous membrane, as well as that of the nostrils and upper air-passages, is swollen, congested, red or violet in colour, and covered in patches by greyish-yellow, tough, fibrinous masses, which are with difficulty removed; though from time to time portions are detached and coughed out, or are carried away by the saliva or nasal discharge, leaving raw surfaces. Deglutition and respiration are performed with difficulty, and the upper part of the neck or throat is swollen and painful. Diphtheritic Enteritis is not at all uncommon among animals, and is usually complicated with disease in the mouth and pharynx. Diphtheritic Ophthalmia is not an unusual accompaniment, leading to perforation of the cornea, and destruction of the eye; and in bovine animals fibrinous deposits have been observed between the digits and around the pasterns, and the hoofs, and even the horns, may be shed. In animals suffering from Diphtheria, when there happen to be sores or abrasions on the surface of the body, these are very often covered with diphtheritic exudations; while beneath the skin in various regions are sometimes found nodular masses of the same nature as the false membranes. The bladder may be involved; and in pregnant animals abortion takes place when the uterine mucous membrane is also the seat of diphtheritic inflammation.

I mention these symptoms and lesions to show that animals

are subject to Diphtheria, and that it is in them a most formidable malady.

I have said that it is usually observed in an epizootic form, and that during different outbreaks it will assume special features, particularly with regard to localisation of lesions, symptoms, and especially nervous phenomena, which are at times very distinct. But, generally speaking, the disease most frequently affects the mouth, pharynx, pituitary membrane, larynx, and eyes, and less frequently, perhaps, the thoracic and abdominal organs.

In the majority of cases death sets in rapidly, and is due either to asphyxia, from obstruction in the air-passages, to blood-poisoning (if I may employ the term), or to prostration or sudden collapse. A fatal termination often takes place within two or three days from the first appearance of the symptoms, though in some cases death may not ensue for as many weeks.

An outbreak of Diphtheria in animals commences as in other contagious disorders, one animal is first attacked, then another, and so on, until all, or nearly all, have been affected. It is readily transmissible from one animal to another of the same species, and also to other species. In fowls the extreme facility with which it is spread is largely due, I think, to the healthy fowls picking up with avidity the mucus and shreds of diphtheritic membrane ejected by the diseased. There are many instances recorded in which creatures of other species have been infected from poultry—calves, sheep, and people. In all species young creatures are most predisposed, and this is most marked in the bovine species, the malady being almost entirely confined to animals under a year old.

Of the contagious or infectious nature of the disease in animals there can be no doubt whatever, as there is an abundance of experimental evidence, to say nothing of the recorded cases of accidental transmission, to prove this. Human Diphtheria has been experimentally transferred to rabbits and poultry, and from these to other animals. It has also been accidentally communicated. There is an instance published of a dog which had eaten the fæces of a child affected with the disease. Within a few days the animal died, and on examination of the

carcase there were found ulcers on the soft palate, and pseudo-membranes on the respiratory mucous membrane.

As has been mentioned, instances are recorded of transmission of Diphtheritis from animals to mankind, and this transmissibility is of the greatest moment to us at present. Seeing the terrible fatality attending attacks of the disease in our own species, and the mystery that often surrounds the origin of these outbreaks, nothing should be left undone to discover their real source or sources, with a view to prevention.

Between individuals of the same species the disease is very infectious, and the severity of the attacks and mortality appear to be greater than when it is transferred from one species to another.

The Veterinary Professor Dammann, of Eldena, now Director of the Hannover Veterinary School,* a most trustworthy observer, describes an outbreak of Diphtheria which took place among calves in 1876, with transmission to man; and as the relation of the bovine species to our own, so far as food is concerned, is closer than with any other animals, we may glance at the salient points of his narrative.

The veterinary inspector of Ludwigsburg reported that in the course of the previous winter and spring, nearly all the calves in the district—about twenty in number—had died during the first two or three months after birth. At Dammann's request, the body of one of the calves—between two and three weeks old—was sent to him on the day of its death. The appearances in the region of the head, which was most involved, were as follows:—On opening the mouth, the anterior part of the hard palate was observed to be covered with, or transformed into, a greyish-yellow mass. When a section was made of the head, it was found that this mass involved the entire substance of the soft palate, penetrating to the bones, and forming a layer of from one to five centimetres thick. On the right side the mass had made its way into the nasal chamber. Both cheeks were swollen, and when cut into, showed the connective tissue spaces occupied with this fibrinous material; the buccal surface also was covered, but not

* "Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie," 1877.

invaded by it, and much more thickly than the palate. Towards the gum, in the vicinity of the molars, there was a mass about six centimetres in length, and nearly three in thickness, one border of which passed imperceptibly into the substance of the mucous membrane, which was destroyed, and the muscular layer exposed. The mucous membrane of the larynx and trachea was swollen and red, and here and there covered with small purulent masses, but its texture was not destroyed. Both lungs, but especially the right, contained in the anterior lobe a great number of small abscesses, some of which projected in a marked manner above the surface, and the interlobular connective tissue in the neighbourhood had become infiltrated with a gelatinous material, and was consequently œdematous. A similar material was observed between and around the toes. Dammann visited Ludwigsburg three days afterwards, and found five calves ill—two in the early stage of the disease, two very advanced, and one on the point of death. The latter had been apparently convalescent a few days previously, but relapsed. The chief symptoms were great dulness and prostration; the animals had no appetite; lay much; there was high fever; frequent short and husky cough; they had great difficulty in standing, the joints being extremely stiff; and saliva flowed from the mouth. There was more or less swelling of one or both cheeks. The inspector himself was suffering from severe sore throat, but his case will be alluded to hereafter.

The disease was evidently contagious, though notwithstanding that a number of calves had died within a short time, this cause was not suspected.

Dammann had two sick calves sent to Eldena for observation and experiment. He placed them, on May 10th, in a large space in his experiment-stable, so that they could move about. Next to their place of confinement was an aged cow, and he bought a healthy three-days'-old calf, and placed it with them. One of the sick calves was submitted to medical treatment; the other, designated No. 1, was left to nature.

On May 11th, No. 1 was very weak, stood with difficulty, drank little, saliva escaped from the mouth, and yellow matter flowed from the nostrils; there was weak cough and diarrhœa.

The entire tongue was swollen, and at the posterior part was a large yellow mass. The temperature stood high. The symptoms increased in intensity until the 15th, when the animal was very stiff, swallowing was difficult, and the breathing laboured and stertorous. The fæces contained many micrococci and small rods. The animal died during the night. On examination of the body early next morning, it was noted that *rigor mortis* was absent.

The blood in the vessels of the head was dark-coloured. The whole of the small intestine was deeply injected, and studded here and there with prominences of a yellow colour, and about the size of peas. The cæcum, colon, and rectum were studded with similar deposits. The mesenteric glands were also enlarged, softened, and greyish-yellow. The right pleural cavity contained about a litre of pus, and the membrane itself was covered with a yellowish-grey fibrinous mass. The pericardium was in a similar condition. The right lung was in places adherent to the side; its right anterior lobe was firm and impervious to air. The posterior lobe, when incised, presented numerous grey and dark-brown patches, varying in size from that of a pea to a hazel-nut. The nasal and tracheal mucous membrane was here and there covered by a purulo-fibrinous mass, though there was no loss of substance. The inner surface of the larynx, on each side, showed two yellow deposits, and on the epiglottis some small roundish yellow masses.

The left side of the tongue, towards the dorsum, and over the entire side, was covered with the same yellowish-grey mass, which involved the mucous membrane, and even the muscular tissue beneath, and was firmly adherent to them. A small deposit of the same character was attached to the hard palate.

The other calf was treated with salicylic acid, and recovered after a serious illness of about a fortnight's duration.

The healthy calf that was put with these two sick calves from Ludwigsburg showed the same symptoms of illness five days afterwards. It remained without treatment for four days. On the second day micrococci and rods were found in the discharge from the nose. On the fifth day the attendant administered a dose of salicylic acid without orders, and continued it until the

eighth day, when it was stopped. On the twelfth day the calf showed a swelling on the cheek; this was opened. Recovery took place about the thirtieth day.

Microscopical examination of the deposits on the mucous membrane resulted in the discovery of numerous bright-looking granules. They were scarcely tinted by carmine, nor were they soluble in chloroform, æther, acids, or alkalies. When isolated, they showed decided movements—they were micrococci; there were also rods. These organisms were found in greatest abundance on the superficial portion of the mass, although they were observable in every part; and not only in the pseudo-membranes in the mouth and pharynx, but also in those found in the intestines and about the feet. The result of Dammann's microscopical investigations was to establish a very close similarity, if not absolute identity, between the Diptheritis of calves and that of mankind. He remarks that the Diphtheria of calves is a general as well as a local disease. The lesions are most frequently found in the mouth (cheeks, tongue, and palate) and pharynx; next in the nasal cavities, larynx, trachea, lungs, small intestines, and cleft of digits. In the mouth, the preferential seat appears to be the cheeks, then the tongue and palate.

The principal symptoms are difficulty in standing, stiffness, fever, prostration, and dulness, and the recumbent position, loss of appetite, and difficult deglutition. The temperature is, of course, much increased. There is an absence of thirst, and the diminished appetite may be due to the pain of eating and swallowing. The salivation is most marked, particularly at the height of the disease, and the swelling of one or both cheeks is also a notable feature. This swelling is circular, hard, painful, and extensive. On inspecting the mouth, there are seen more or less extensive yellow or yellowish-grey deposits, variously prominent, on the mucous membrane of the palate, tongue, or cheeks. When opening the mouth is too painful, then the fingers can detect the existence of the pseudo-membranes on the cheeks, at the part corresponding to the external swelling. The presence of micrococci is diagnostic of the disease.

When the disease affects the trachea and lungs, cough is present; when the intestinal tract, then there is diarrhœa, the

fæces containing micrococci. The seat of the malady is primarily in the cavity of the mouth and in the nasal chambers; when the lungs are affected, this is probably due to inspired particles of matter from these cavities; and when the intestines are implicated, it may be suspected that portions of the exudate in the mouth have been swallowed.

The mucous membrane is not alone involved, for in Dammann's first case the palate bones were perforated, and a communication established between the mouth and nasal cavity. I believe the cavities of the nose are rarely involved in the diphtheritic process in man. Nevertheless, Nasiloff mentions some instances he observed in children.*

The contagium is both fixed and volatile, according to the observations made at Ludwigsburg, where the cases appeared at some distance from each other, as well as when animals were in actual contact. It appeared to be also very resisting to external influences, for when the sheds were occupied by fresh calves three-quarters of a year after they had been cleared out, these became affected in turn. Only very young calves were attacked —their ages ranging from a few days to some weeks; cows were exempt during the entire outbreak. This exemption was attributed to the greater thickness of the epithelial covering and density of their mucous membranes, which in young animals are softer and more vascular.

The period of illness was from three to five days, and without active and timely treatment all those attacked perished.

Dammann placed a piece of diphtheritic deposit in the mouth and nostril of a four-days'-old lamb. It was ill two days afterwards, and died on the fourth day. The lesions were those noticed in the diphtheritic calves. Another lamb had a piece of diphtheritic mass from a calf placed in its mouth. It remained unaffected. A year-old rabbit was inoculated in the muscular part of the thigh, and died the following day. There was a foul-looking greyish deposit around the seat of inoculation, the fascia was of a greenish-grey colour, and for some distance around the wound there were hæmorrhagic patches in the muscular tissue. Micrococci were found in the blood. Another older rabbit was

* Virchow's "Archiv," band l., p. 550.

inoculated in the same place as the last, with a small portion of the diphtheritic mass from a calf's tongue. It also died next day, and the lesions were similar. An incision was made in the conjunctiva of the right upper lid of the eye of a one-year-old lamb, and a morsel, about the size of a pea, of the diphtheritic deposit from the tongue of the calf No. 1 was inserted. In two days the eyelid was very much swollen and the conjunctiva red and turgid, with a discharge from the eye and covering the cornea, as well as a yellow patch on the membrane, some distance from the point of inoculation. There was fever and loss of appetite. On the following day the inoculated mass had increased to the size of a bean, and the next day it was still larger, and the entire cornea was opaque, yellowish-green in hue, and where the yellow patch first appeared the part was very prominent and covered with unhealthy pus. Eight days after inoculation, the cornea was removed. It was very much thickened, and when examined microscopically was found to be infiltrated not only with pus corpuscles, but throughout with myriads of micrococci. Another lamb was inoculated in the same region, but the effects were more severe.

These experiments proved in the first place, that not only was Diphtheritis of the calf transmissible to lambs, by simply placing a small portion of exudate in the mouth, and without abrading or wounding the mucous membrane, but they also, in the second place, demonstrated the extraordinary similarity, if not absolute identity, between this Diphtheritis of calves and that of mankind, the specific processes following inoculation, and observable in the conjuctivæ and corneæ of the lambs, no less than in the muscular tissue of the rabbits, being in no perceptible manner different from those noted in inoculations from human Diphtheria. The rapidity with which infection takes place is also well shown in the case of the rabbits, death occurring in twenty-four and twenty-five hours.

The most important part of the narrative is yet to be alluded to. At the suggestion of Dammann, the veterinary inspector of Ludwigsburg commenced on April 29th to treat the diseased calves by dressing their mouths with salicylic acid. On May 1st, in the evening, he experienced a severe pricking sensation in the

throat; nevertheless, the treatment of the calves was carried out most conscientiously. On May 5th he had to stay at home, and when Dammann saw him on the 9th he was in bed, very feverish, suffering from pain and dryness in the throat, great pain in swallowing, weakness of the limbs, pain and heaviness of the head, and thirst.

The cervical and submaxillary glands were swollen and tender, and the mouth was opened with difficulty. The mucous membrane was of a dark-red colour, and the soft palate and one of the tonsils were very tumefied, and appeared to be covered by a greyish-green membrane. On this day surgical and medical treatment was adopted, and on the days following, pieces of greyish-white membrane were detached by the brush employed to dress the fauces. The local disease was under treatment for ten days, but the general weakness continued until the end of June.

About the same time that the inspector was suffering from treating the sick calves, the dairymaid who attended to them was also infected, though not so severely, as she had not to go to bed. The symptoms were the same. Dammann also learned that besides these persons who had been in more or less close contact with sick calves, others in this locality had been suffering from sore throats.

Dammann himself, on May 8th, two days after he had examined the carcase of his first diphtheritic calf, had a pricking sensation in his throat; and his assistant, after dressing the mouth of one of the calves from May 11th to the 14th, had also this symptom, as well as pain on attempting to swallow. Salicylic acid gargles, at once resorted to, and continued for some time, caused the symptoms to subside and finally disappear.

As to the origin of the outbreak, nothing could be discovered, and the question as to whether it was due to transmission from mankind remained undecided. Certain it is that, at the commencement of the outbreak among the calves at Ludwigsburg, in the winter of 1874-75, the child of a coachman died of Diphtheria.

I have dwelt thus lengthily on Dammann's report, as it is most carefully drawn up, and more especially as he is considered

a very reliable authority in Germany; and also because the relationship of the bovine species to mankind is so intimate.

Nothing more definite is known with regard to the transmissibility of Diphtheria from bovine animals to man. But of the frequent existence of the disease in these creatures there is ample evidence, and there is even some casual proof that this communicability may be a more common occurrence than is generally suspected. A recent French writer, M. Lenglen, of Arras,* describes an exactly similar malady to that investigated by Dammann, but which he (Lenglen) designates as Gangrene of the Mouth (*Gangrene de la bouche*). He witnessed it chiefly among calves, though he admits it is not special to the bovine family, as he had observed two cases of it in foals—one fifteen days old, the other about five weeks, and in lambs from fifteen days to six weeks. He did not think it was contagious, though he prescribes sanitary measures as if it were so.

Mr. Macgillivray, veterinary surgeon, Banff, also describes the same disorder, under the name of "Tubercular Stomatitis,"† and which he asserts has been very common in his practice for fifteen years. Though it chiefly occurred in calves, yet he had not unfrequently met with it in one-year-old cattle, once in a cow, and once in a horse. The symptoms were at first profuse salivation, very fœtid breath, and difficulty in mastication. On inspection of the mouth, the lesions were observed inside the cheeks, about the tongue, gums, and the pharynx, or very rarely about the entrance to the larynx. He describes the malady as consisting in a cheesy deposit in, or degeneration of, these parts. When in the buccal region, this deposit is generally greyish in colour externally, yellow internally. He is of opinion that it is highly contagious. He gives strong evidence in favour of this contagiousness, and the description of his cases is very interesting, as showing their identity with those recorded by Dammann. But I believe he erred in considering them as of a tubercular nature, for there is evidently nothing analogous to Tuberculosis in the lesions; and, besides, calves are extremely rarely affected with Tuberculosis, while sheep and horses (which he asserts he has

* "Recueil de Méd. Vétérinaire," 1880, pp. 969, 1091.

† VETERINARY JOURNAL, January, 1881, p. 1; June, 1881, p. 377.

seen attacked by the disease) are almost entirely exempt from it. The malady was evidently Diphtheritis, as described by Dammann; and in discussing its etiology he makes some remarks which are extremely pertinent to the purport of this paper. He says, referring to one outbreak: "An interesting point arises in reference to the origin of the disease, namely, as to whether it was inherent in the first calf and communicated by it to the others, or were the whole six contaminated by the milk from the two tuberculous cows? . . . . If the disease was communicated to the calves by the milk, the question presents itself as to whether the use of the same sort of milk may not account for the occurrence of certain cases of sore throat or mouth in the human consumer. *Isolated cases of sore throat often occur among farm servants*, where ugly-looking yellowish spots or deposits are found in various parts of the throat, and even the mouth, requiring a good deal of brushing and dusting with very strong caustics. . . . . That the Tubercular Stomatitis of calves is contagious, is amply demonstrated in this communication; for whether we consider it as passed from calf to calf in the cases chronicled, or as conveyed to all by means of the milk, the fact still remains that it is transmissible. For my own part, I firmly believe that one calf conveys it to the other, not only by actual contact, but also if the calves are sucking the same cow, or getting their milk out of the same dairy utensils, as often happens. . . . . Whether, therefore, the contagion comes from the milk originally, or from calf to calf, if it gain access to mucous membrane of cheeks, gums, tongue, or throat, it produces in a more or less aggravated degree the Tubercular Stomatitis," etc.

A most serious question here arises as to the relationship of this disease of calves and human Diphtheria. If the disease in the calves is produced by the milk of the cow, why may not this milk also produce the same malady in man? There is nothing at all improbable in this, looking at Dammann's experience and Macgillivray's reasonable suppositions. On one notable occasion—that of a somewhat recent outbreak of Diphtheria in the human species at Kilburn, London—it was suggested that the malady most probably owed its origin to the existence of what is com-

monly known among cow-keepers as "Garget," to veterinary surgeons as "Mammitis," or "Mastitis," among cows in a certain dairy, from which milk had been distributed; and the question arose as to whether there was any possibility of such an origin for Diphtheria. If the disease could be originated and transmitted in such a manner, then a most important discovery would have been made with regard to at least one source of a scourge, the origin of which is involved in mystery.

Is there any disease of the mammæ, or udder of the cow, which will, through the medium of the milk, produce Diphtheria in mankind? At present we are without evidence to this effect. If we regard Diphtheria as a specific disease, due to or characterised by the presence of certain microscopical organisms, as has now been well established, then we must trace the origin of outbreaks of the disorder to a diphtheritic source. I know of no malady specially affecting the lacteal apparatus of the cow which is of the nature of Diphtheria. The disease, as we have seen, attacks young calves, very rarely cows, and is, if not at first then very soon after, a general disorder. The question may be asked, Where do the calves receive Diphtheria from? And to this we cannot, as yet, give a satisfactory reply. As milk is their only food at this early period of their lives, then it would seem probable that the disorder is conveyed to them through this medium, and that this fluid has been contaminated by being drawn from a diseased gland. But, as I have said, we have no evidence of the existence of diphtheritic inflammation in the udder of the cow, though there is no reason why such a condition might not be present on rare occasions—for frequent they cannot be, else they must have been noticed.

There are three kinds of Mammitis—catarrhal, interstitial, and erysipelatous. But a diphtheritic kind has not, to my knowledge, been yet distinguished. Mammitis, as we know it, is most frequent when the mammary glands are active, and particularly soon after parturition; it may be due to the most varied causes, as injuries, influence of cold or variable temperature, overstocking the gland, or allowing the milk to remain too long in it, improper food—anything, in fact, which disturbs the functions of a very vascular and active secretory gland.

But there has not unfrequently been observed a form of Mammitis of a phlegmonous or erysipelatous nature, which has assumed an epizoötic or enzoötic character, affecting large numbers of cows in a district, and causing serious loss, so far as the production of milk is concerned. There is every likelihood that this form is contagious, and that the milk is dangerous as food. I am not aware that it has been observed in this country, but it has been reported upon by most excellent veterinary authorities in Germany. For instance, Professor Zurn, of Leipzig, relates* that in the summer of 1874, in a certain district, six or eight cows were affected, while grazing, with a disease of the udder. Isolated cases occurred during the following winter and summer of 1875, but in the winter of 1875-6 the malady again showed itself to an alarming extent, no fewer than forty cows being attacked out of a herd of 180.

The animals were sometimes ill for several days before the prominent symptoms of the disease were noticed. These were the presence of a watery secretion from the udder, containing coagulated masses, which gave rise to much pain as they passed through the canal of the teat; sometimes the secretion looked like white or yellow pus; the gland, as a rule, remained soft, and the temperature was seldom raised. One or more quarters of the gland were involved, and one attack did not protect from another. In many cases the part of the gland affected was totally destroyed. Dry cows (*i.e.*, cows not in milk) were attacked, as well as those in which the secretion was abundant. Suckling ewes and sows were infected from the cows, after lying or rolling about on the litter and dung from the cowsheds in which the diseased cattle stood; while the milk from these killed the calves, and that of the ewes and swine the young lambs and pigs. The samples of milk examined by Zurn did not all present the same appearances, though all were acid. When allowed to stand for some time, a greyish-white sediment settled at the bottom of the vessel, while the supernatant fluid was of a citron or dark-yellow colour, seldom of a light-green tint. After a time a very thin layer of cream formed on it. The sediment contained a large quantity of epithelium and pus-cells, and a great

* "Deutsche Zeitschrift für Thiermedicin," 1877, p. 381.

number of motile micrococci, which in two or three days lost their movement, clustering together and forming masses of zooglea. When the fresh milk was examined numbers of intertwined rod bacteria, forming a kind of feltwork, were noticed. Besides these, there were many cells from ·004 to ·005 millimetre long, and ·002 to ·0025 millimetre broad.

In all the cultivations made by Zurn, and which extended over a year, there never appeared any fungus except thin flocculi, composed of chains of *Torula*, resembling the yeast fungus. In other specimens the *Mucor mucedo* spores were found, which grew extensively when the milk was left for any time.

Zurn attributed the outbreak and extension of the malady to the micrococci and rods observed in the milk.

A similar disease has been reported upon as existing among cows, by Professor Dieckerhoff,* of the Berlin Veterinary School, who designated it "Infectious Mammitis." It was due to local infection, and to no other cause, so far as could be traced; it commenced at the extremity of the teat, gradually extending into the milk sinuses and interior of the gland. The malady was conveyed from one farm to another by persons who handled the cows.

Professor Franck, of the Munich Veterinary School, had previously drawn attention to this infectious Mammitis in the cow, which he discovered to be due to bacteria.† It could readily be produced experimentally. The readiness with which it could be transmitted was doubtless due to the peculiar structure of the teat and arrangement of the milk sinuses and ducts in ruminants, as well as to the habits of these animals.

Rivolta, Veterinary Professor in the University of Pisa, also describes an infectious Mammitis in sheep, special or specific in its character, a kind of septic disease.‡ But we have no mention of Diphtheritis affecting the udder; though there is no reason why the mucous membrane of that gland should not be involved

* "Wochenschrift für Thierheilkunde und Viehzucht," 1878; VETERINARY JOURNAL, 1878, p. 335.

† "Handbuch der Thierarzlichen Geburtshülfe."

‡ "Giornale di' Anatomia, etc., degli Animali," 1875; Fleming's "Veterinary Obstetrics," p. 695.

as well as other mucous membranes. Indeed, there is no difficulty in understanding that a calf suffering from Diphtheria, and applying its mouth to the teats of the mammæ might readily infect the gland, and through it the cow. Granted, therefore, that the malady is readily transmissible from bovine to bovine, and that the calf—leaving out of sight the manner in which it may become infected—may transmit the infection to the udder of the cow, there is every reason to assume that the secretion of the gland is rendered infective, and will convey Diphtheria to other creatures which consume it; and as mankind can receive the disease from the bovine and other species, there is scarcely any doubt that the disorder might become spread among people, and especially young children, by milk containing the diphtheritic germs which have been developed in the udder of the cow.

That the Diphtheria of animals is always derived from an infectious source may be assumed as a fact established by scientific research; that it is very similar to, if not identical with that of man, is evident; that it is transmissible from animal to animal, and from man to animals, we have accidental and experimental evidence to prove; and that it may be conveyed from animals to the human species, is also a fact that is supported by the instances recorded of accidental transmission.

It must be confessed, however, that there is much yet to be learned with regard to the disease, not only in animals but also in man; and it is now mainly to experimental pathology that we must look for a solution of the obscure points which are more particularly related to the mode in which the malady originates, and the circumstances which favour its extension as an epidemic or epizoötic scourge.

CONTAGIOUS PLEURO-PNEUMONIA IN ANGORA GOATS.

BY D. HUTCHEON, M.R.C.V.S., COLONIAL VETERINARY SURGEON, CAPE OF GOOD HOPE.

ON the 20th of March last I received a telegram from the Civil Commissioner of the Division of Bedford, informing me that a very fatal disease had broken out in a flock of Angora goats belonging

to Mr. Van Niekerk, of Brakfontein, and requesting me to come there at once and examine into the nature of the disease. I arrived at Bedford on the evening of the next day, and proceeded to Mr. Niekerk's farm on the following morning. I examined the goats, and made a *post-mortem* examination of a number of those which had died during the previous night. I found that the disease was Pleuro-pneumonia; but whether it was of a specific and contagious character, due to a special virus which had been carried by some means into the district, or only ordinary Pleuro-pneumonia, produced by some local influences, I was not prepared at once to give an opinion. I was certainly inclined to regard it as being of a non-contagious character: 1st, Because I had no previous knowledge of a contagious form of Pleuro-pneumonia which affected goats; and 2nd, The rapidity with which the disease had spread among Mr. Niekerk's flock, affecting more than 700 goats within a period of fourteen days, induced me to believe that its rapid spread could not be due to contagion alone, but to some local influence, such as the excessive rains, etc., which were prevalent in the district about that time; and that when the exciting cause should cease, and a change to more favourable weather ensue, the disease would disappear with the same rapidity as it had manifested itself. But after carefully watching the progress of the disease for three days, and noting the uniform character of the pathological appearances in the lungs of those that died, I began to realize that I had a specific disease to deal with. For further proof upon this point, I requested to be allowed to kill two goats which were suffering from the disease in its earlier stages, and an examination of the lungs of these removed all doubts from my mind as to its specific character, the pathological appearances being perfectly distinct from ordinary Pleuro-pneumonia. I now directed my attention to its contagiousness or otherwise. I had, immediately after my arrival, purchased six healthy goats, and placed them among Mr. Niekerk's affected flock, with the view of testing this point; but as I learned the history of the outbreak, and watched its progressive spread, I became convinced of its contagious character before these six goats became affected with the disease. Yet the fact that these healthy goats caught the infection, and

manifested the symptoms of the disease ten days after their introduction to the sick flock, added very important confirmatory evidence of its contagious or infectious character.

The history of the outbreak, as far as I have been able to collate it, is as follows :—Mr. H. David, of Somerset, South Africa, imported a number of Angora goats, rams and ewes, in the month of December last. These goats left Angora on the 1st October, 1880, and Constantinople on the 22nd. They arrived at Port Elizabeth, South Africa, about the middle of December ; at Cookhouse Station on the 22nd, whence they were conveyed to Somerset in waggons, and kept in Mr. David's yard until the day of sale, January 26th, 1881. Mr. Niekerk purchased a ram at this sale, and it arrived at his farm on the 27th, when it was shorn and dressed with a solution of tobacco on the 28th, and on the morning of the 29th it was observed to be sick. It was then placed in a small house along with a ewe, which was suffering from some kind of lameness. The ram was carefully attended to, and ultimately recovered ; but seven days after the ram became sick the ewe with which it was associated began to manifest the same symptoms as it had exhibited, and ultimately died. A *post-mortem* examination of this ewe showed that it had died from a species of "lung sickness." After this the ram was allowed to associate with about fifty lame goats, which were kept near the homestead for special attention. On the 26th of February these lame goats were reintroduced to the general flock, and on the 4th of March the lung disease began to manifest itself among them, after which it rapidly spread over the entire flock, consisting of 1,224 goats, proving fatal to 879 of their number.

It may be of some interest, as illustrating its character, if I record the course of its outbreak in several other flocks. On the 26th of February Mr. Niekerk sent a ram to Mr. Botha, of Goba Drift, obtaining one of the latter gentleman's in exchange. The ram that Mr. Botha received died on the 7th of March, and on the 22nd the first one of his general flock perished from the same disease ; after which it spread over his entire flock of 720 goats, proving fatal to 530 of them. Mr. Botha sold about fifty "Kapaters" to Mr. Farr, a butcher in Bedford, on the 22nd of

March. These goats were herded on the commonage along with about a dozen belonging to a native, and meanwhile killed as they were required. Nothing was heard regarding them until the 16th of April, when one of the native's goats died from the disease. By this time Mr. Farr's goats had all been slaughtered; but, on inquiry, I ascertained that the lungs of those which were the last in being killed showed signs of the disease. From these goats the disease gradually spread to every flock grazing on the commonage. One other instance in this district will suffice. Mr. Leonard, whose farm adjoins that of Mr. Botha, had a flock of goats grazing in close proximity to where Mr. Botha's sick goats were allowed to run. At my suggestion, he removed them to the other side of his farm on the 24th of March, in order to avoid contagion; but on the 9th of April he observed one of his goats sick, and, on killing it, found that it was affected with the malady. The disease gradually spread over his whole flock of 363 goats, out of which only eighty recovered.

I placed six healthy goats among Mr. Niekerk's affected flock on the 23rd of March. Eight days afterwards two of them appeared dull and feverish-looking. I killed one of them, but the lungs presented no appearance of the disease. Four days afterwards I killed the other, and found that the disease had made considerable progress in the lungs. Two days later I killed three more, and found the disease in the lung lesions in each considerably advanced. I allowed the sixth one to die, which event took place on the twenty-second day after being introduced to the affected flock.

There was an outbreak of this disease in a flock of goats in the Jansenville Division, which is very instructive as showing how it might have been suppressed, had anything like intelligent energy been displayed by those in authority. A number of imported Angora goats, which came by the same ship as Mr. David's, but belonged to another gentleman, arrived at Mr. Cawood's farm, Mount Stewart, in the Jansenville Division, on the 23rd December. Mr. Cawood placed some of the Angora rams amongst sixteen of his goat ewes, and eight days afterwards took the ewes back to his flock of 460 goats, some distance off. Six days subsequently to their reintroduction to

the flock, his herdsman reported that one of the ewes was sick. This ewe died on the following day, and in about a week after all the sixteen ewes were dead. About four days after this occurrence the others commenced to die at the rate of ten and twelve a day. He removed twenty which looked healthy, and inoculated them; but these died. He then *drenched** about 100 of them, but they also died. He therefore cut the throats of the remainder and buried the carcases, and thus stamped out the disease. None of his other flocks have become affected, nor has the disease shown itself in any other flock in the district. What appears somewhat strange in connection with these outbreaks, on the theory of its introduction by these imported Angoras, is the fact that the disease has only shown itself on these two farms—I mean primarily—although the same shipment of goats has been scattered over a great portion of the Eastern Province of the colony. There were a number of these goats sick, and some died, after the purchasers had moved them to their respective farms. But in no other instance that I have heard of has the disease spread to the general flock. One explanation of this may be that these goats appear to have taken sick immediately after their arrival at these farms, and were kept carefully isolated from the general flock until after they were quite recovered. One instance of this I will relate. Mr. Wm. Nel, a farmer, near Adelaide, bought a ram and ewe out of the same shipment, taking them direct from Port Elizabeth to his farm. They were put into a house along with an old ram which Mr. Nel purchased from another farmer in the colony. The imported ram first became sick; about ten days afterwards the ewe was similarly affected. Both appeared very ill, but ultimately they recovered. Very soon after the old ram became affected; and although the same treatment was adopted as in the other two cases, it died. Mr. Nel opened it, and reported to me subsequently, when he had seen other cases, that this ram died from the same disease that is carrying off so many goats at present. Mr. Nel kept the imported ram and ewe apart from his flock for over two

* Drenching is taking the diseased lung and any fluid in the pleural cavity, mashing them all up together, adding some water, then straining out the solid portions and giving each animal a small quantity as a drench.

months, and up to the present time his flocks are free from the disorder.

From the above history, crude though it be, it will be seen that the disease has a period of incubation of from six to ten days, and during this interval there are no symptoms discernible except to a close observer. The first indication is a cough, a tendency to lie down, and to lag behind the rest of the flock; but not until the disease has made considerable progress in the lungs do the goats cease to feed. In fact, I have watched them feeding when the lungs were very extensively diseased, giving a grunt between each mouthful. When consolidation of the lungs has gone so far as to make breathing very difficult, it is then that the poor creatures lie down, and, with a fore-leg stretched out, utter a painful grunt at each expiration. In the last stages they stand with the mouth open, the tongue protruding, frothy saliva dribbling from the mouth, and bleating in a most distressing manner. The temperature ranges from 105° to 107° F., the normal temperature being 102° to 103° F.

Pathological Appearances.—The disease first makes its appearance in the lungs in a number of small nodules, about the size of a pea, and of a light yellow colour. Surrounding this nodule, in a spherical manner, is a congested ring, of a port-wine tint varying in diameter from one-eighth to one-half inch, according to the size of the nodule. These nodules are not confined to any particular part of the lung, neither are they arranged in any definite manner: they are limited sometimes to one lung, sometimes to the posterior portion of one lung, and are very often irregularly deposited over both lungs. These nodules enlarge in a spherical manner, and ultimately coalesce, when the whole lung or lobe becomes quite solid. The pleura-pulmonalis immediately over these nodules first becomes involved, when it looks like an abraded membrane, injured by friction. Later the whole of the pleuro-pulmonalis of the affected lung becomes thickened, and of a pale blue colour. There is very little fluid effused into the pleural cavity, but a considerable quantity of coagulated serum is found surrounding the pericardium, especially around its base. The lungs, in some cases, will be found adherent to the walls of the chest, but not with that firmness

characteristic of bovine Pleuro-pneumonia. The pericardium is generally full of a clear fluid, and both it and the fluid found in the chest coagulates on cooling. On examining this fluid with a microscope immediately after death, I found a great number of small bodies having the same shape and structural appearance as the blood-corpuscles, but varying a little in their size. These bodies displayed very active movements; at times throwing out processes, at others changing their form into every variety of shape. In addition to these, there were a great number of small circular bodies, about one-quarter the size of the blood corpuscles, which displayed very active vibratile movements. These latter increased wonderfully after the fluid had stood for a day or two. I also noticed a few, perhaps one in five hundred, corpuscles of very large size, about four times the size of the blood corpuscles, oval in shape, but apparently of the same structure as these latter. They did not display any movement.

I need hardly mention that there were many variations from the above description. In some cases, generally among those that were first affected in a flock, the disease in the lungs seemed to run its course more rapidly than ordinarily, the animal dying within a couple of days after being first noticed to be sick. In such cases I generally found that the pleural lesions were more extensive than the pulmonary. The state of the weather and sudden variations in the temperature exercised a considerable influence in either hastening or retarding the progress of the disease, as well as to lessen or increase the death-rate.

As far as my examinations have gone, I have not found any pathological changes in any other organ of the body except the heart, in which in two cases I observed the endocardium marked by dark spots, which appeared to penetrate the muscular tissue of the heart.

With regard to treatment, the universal demand of the farmers in this colony is for specifics to cure disease—something that will act like a charm after the administration of one, or at most two doses; while they ignore entirely the most ordinary hygienic measures. As a consequence, very few medicines have had a fair trial; but judging of the value of medicine in this disease by

its effects under the conditions that exist here, I am not inclined to put much faith in medical treatment at all. So far the flocks which have been the least disturbed by any medicines, excepting of the simplest character, have shown the largest per-centage of recoveries. I am inclined to favour a laxative and diuretic dose of medicine when the goats are first observed to be sick; then put them into a paddock or quiet place where they will not be disturbed or distress themselves by trying to follow the flock, and if at all possible put them under cover at night. If this plan were adopted, I believe a large per-centage would recover. Struggling with them, to give them any kind of medicine when very sick, evidently hastens their death. In this colony, unfortunately, there are many farms on which there are neither paddocks nor houses for stock to run into. As a consequence, animals which are affected with any disease, especially when such a disease involves the respiratory organs, stand a very poor chance of recovering, when exposed to such extremes of temperature as occur in this country at certain seasons of the year, and within the twenty-four hours.

I may just remark here that the flesh of these diseased goats is eaten with perfect impunity, both in the raw state by dogs, etc., and by the natives when cooked. I have eaten some of it myself, and could not detect anything different about it, either in taste or flavour, from healthy mutton.

Hitherto the disease, when once it had invaded a flock, attacked every goat in that flock, with two exceptions, which I will mention presently; and on an average about one-third recover, that is where they have a moderate chance. The two exceptions are—1st, One flock which I inoculated as soon as the disease broke out amongst them. This flock originally contained 127 goats. Four were dead before I inoculated, and six were sick: the latter I did not inoculate. Of the remaining 117, eighty-seven took the disease; of these twenty-three recovered, and thirty still remain free from it.

The second instance was in a flock belonging to Mr. John W. King, of Madjesfontens, in this division. This farmer has in all 1,800 goats, divided into three flocks. The disease showed itself in one of these flocks, and as soon as he observed it he

carefully isolated this flock from the other two. He then drafted out from this flock every goat as soon as it was observed to be the least dull, and turned it into a small paddock in front of his house. In this paddock there was a hut where the sick goats were put at night. All the severe cases he had killed at once, and buried, and the result is that the disease has died out, not above half the number of his flock became affected, and he has had no fresh cases for twenty-one days. He now meditates killing the small number that recovered. But notwithstanding such facts as these occurring before their eyes, neither the Government nor the farmers can bring themselves to deal with this disease in anything like a thorough manner. Mr. Cawood's energetic action shows clearly how easily it might be stamped out; and Mr. King's action proves that watchful and immediate isolation will cause it to die out; while its regular and consecutive spread indicates that the virus is not carried to any distance by the atmosphere. How long after an animal has recovered from the disease it might be put amongst healthy goats with impunity I have no statistics to determine; the only instance that I know being Mr. Nel's ram and ewe, which were put with the general flock about two months after recovery.

A very interesting question now remains, and I trust that you, Mr. Editor, with your wonderful sources of information, will be able to unravel it. Does this disease exist in Asia Minor? and does it manifest the same virulent characters there which it has done in this colony? Because, as I mentioned above, it is very strange that so few of these goats should become affected with the disease, unless they had it before. And, again, how was it that those few goats which became affected did not show the symptoms earlier, seeing that the disease has such a short period of incubation in this colony? One thing is clear, that they were the medium by which the disease was carried into this country; and, legislatively, there ought to be no difficulty in dealing with it. But on this question I cannot trust myself to speak, as I have been so disheartened and disgusted by the callous indifference manifested by our legislators in regard to this question.

I may mention briefly that neither sheep nor cattle can be made to take this disease. Sheep have been kept with infected

goats during the whole course of the malady through the flocks, and not one has been observed to be affected with it in its typical form. But several sheep which had been suffering from tubercle in the lungs died, and the pathological appearances in their lungs incline me to believe that the immediate cause of death was a modified form of this disease. I saw a similar instance in a calf which was kept in a shed with the diseased goats at night; but healthy animals do not take the disease.

I have been making more experiments with regard to the preventive effects of inoculation, but the further consideration of that point I must leave to another time.

[We are not aware that a contagious disease like that described by Mr. Hutcheon prevails among goats in Asia Minor. But we know little, indeed, of the maladies peculiar to that region, as veterinary science is all but, if not entirely, unknown there.]

ON A HORSE DISEASE IN INDIA KNOWN AS "SURRA," PROBABLY DUE TO A HÆMATOZOON.

BY G. EVANS, M.D., M.R.C.V.S., ARMY VETERINARY INSPECTOR. INDIA.

(*Continued from page* 88.)

B. *Remote Causes.*—The proximate cause of Surra Disease being the characteristic parasite in the blood, the remote causes are the conditions which bring the parasite into the system of the animal. If the fly which I mentioned, or any other, propagates the disease by inoculation, it is one of the remote causes. The parasite of Surra is so new to science that it has not yet been thoroughly studied. We know nothing of its natural history, excepting its appearance in the blood; though we know it must come from without, but how or whence we know not. I approach this subject, therefore, with the greatest caution and diffidence. My opinion is provisionally based upon a few facts, until more are obtained to confirm or to correct it.

All the lowest forms of organic life, whether of the animal or vegetable kingdom, must have water more or less stagnant for their development: whether it is a chemical or an organic solution they breed in, their growth is arrested as soon as the water is evaporated. Water, more or less stagnant, and more or less impregnated with a chemical or organic solution, and having a certain temperature, is essential to their origin and development. An organic fluid—such as blood, or an infusion of hay or grass—is more favourable than a chemical solution. Some of them have several states of being. When they are transferred from a dead solution into a vital fluid, such as the blood, they assume new forms; so that we must not always look *without* for the forms we find *within* the animal economy. The parasite of disease may exist in a pond or in moist ground in a very different form to what we find it in the blood. Therefore, from analogy, I *assume* that the parasite of Surra has its original normal development in moist ground, stagnant ponds, or slow running streams; and I further assume that it exists in such places in a different form to what it does in the blood. For while I readily succeeded in propagating it by transference to living, healthy blood, I have in two experiments failed to develop it by transferring it with a little blood into well-water, or into infusion of hay. The next fact is this: the spores and ova of a great many of these low organisms survive for an indefinite period in the dry state, in which state they may be conveyed by wind and other agents to distant places, where they will develop under favourable conditions of moisture and heat. In wet seasons they remain localised to a greater extent than in dry, hot seasons, for they cannot be blown about; but those scattered in a dry year may remain in dry places all over the country until the rain of the following year develops them, and then people often think the rain brought the pest, whereas the germs were brought under very different conditions many months before. If the Surra parasite, in some form or other, develops in ponds which dry up during the hot season, the germs or ova would be widely scattered by the wind which raises the dust of the beds of those ponds afterwards; the spores or ova would be sown broadcast; many would rest on the food, others in the

drink of horses, and thus they would be conveyed into the stomach; while others would be inhaled into the lungs, and develop by the moisture and heat there, then pass into the circulation. Possibly that may in some measure account for the disease prevailing much more this year and the last, which were very dry and hot, than the previous year (1878), which I was told was a very wet one in the district of Dera Ismail Khan. If, again, the horses daily drank water from a source in which these organisms naturally developed themselves, that would be the most common way in which they were conveyed into the system, and that water would be the chief remote cause of the disease. My opinion is that such is the case in the district of Dera Ismail Khan. I cannot prove it, for I have not been able to find the parasite in the water; but I declare that the water which the horses drink is very impure, and obtained from shallow, narrow, winding irrigation channels, choked with sedgy vegetation and slime, most favourable places for the breeding of all kinds of low organisms. For a further description of them I beg to refer to Appendix K. That the water is of a marshy character is further shown by the presence of flukes in the liver of two Surra cases I made a *post-mortem* examination of.

With regard to the food being the remote cause, it has been suggested that the disease is due to the horses eating grass from low inundated land on the bank of the Indus, etc. Major Money, 4th Punjab Cavalry, informed me that the disease was common among the horses of the 3rd Punjab Cavalry, when they got grass from inundated ground near the Indus, but it ceased when they received grass from higher ground. It is not improbable that such grass would convey the ova of the parasite; but it is not the common cause at the outposts, as the disease appears when the horses feed on chopped straw, and drink irrigation water at the base of the hills, forty miles beyond the reach of the Indus, just as much as when they feed on grass. And the disease prevails, moreover, at these posts far more than at Dera Ismail Khan, close to the Indus, where they get better water from wells.

I cannot speak favourably of the horse-standings at all the posts. Some of them were very much soiled, but upon the whole

they were not worse than the average of native cavalry, and I do not think the disease arises from this source. However, I would strongly recommend that the standings be raised and kept even, and the soil renewed periodically. There was an abundance of clean dry earth and sand near all the posts, but I saw none used to put on the ground when horses stale, to keep the stalls dry and clean, as is the practice in all well-regulated stables and horse-lines in India.

C. *Ultimate Causes.*—These are still more obscure. They comprise all those atmospheric and other conditions which favour the development of low organisms, the "Blight" upon vegetables, and epidemic disease (Cholera, etc.) among men. I have already referred to the manner in which germs are scattered more in dry seasons than in wet. The more dust there is blown about, the more broadcast are the spores and ova of low organisms sown; but the seeds of disease are not so plentiful as to be scattered as much at one dry season as another. No doubt, electrical conditions play a very important part, and very probably the conditions of the "spots" upon the sun also, as ultimate factors in the causation of disease germs. There is no doubt that Surra, though enzoötic, as a rule, in certain districts, does become epizoötic in some years; as the Tehsildar of Tonk informed me that about twenty years ago his uncle, the late Nawab, lost every one of his horses from Surra—about 300 in number—and that the disease was not very common since then until last year, though the sanitary conditions of the water, etc., remained the same. With regard to the influence of the different seasons of the year, I failed to obtain accurate statistics, as many horses of the 4th Punjab Cavalry have died with no record to show when they were first reported sick. But there is abundant evidence to show that the outbreak takes place usually in August, and more in September, continues until January, then suddenly ceases.

Prevention.—The important practical question is, If the cause of the disease does originate from the water, can we so alter its quality that the parasite will not breed in it when the most favourable ultimate or atmospherical causes prevail, as in epizoötic years? It would be impracticable to recommend all the

irrigation channels to be made "puckha," and kept clean ; yet if my opinion, as expressed above, is correct, nothing short of that would do. But the water could be corrected by boiling it every day before the horses drink it, which would be a very expensive process in a district where fuel is so scarce. I do not know what else to recommend, unless good water can be got, at reasonable cost, by artesian wells, from below the salt strata ; or pipes be laid down to draw water direct to the posts from the rivers, above where they are broken up to supply the irrigation channels : the pipes need not be large. It is simply a matter of expenditure, with regard to the average annual loss of horses from this disease, and the correctness of my opinion as to the causes of it. I wish much that I were able to advise upon this subject with less hesitation. There can be no doubt that the water is very bad, but whether it has any direct relation to Surra, as a remote cause, has not been proved, and perhaps cannot be proved without an expensive experiment as above recommended.

Cure.—I am very sorry to add that I have less hopes of finding a cure for the disease than I have of finding a preventive. The experiments I have made with carbolic acid do not promise success. Besides case 4, recorded in Appendix D, the following horses were selected for treatment exactly in the same manner ; namely, 4th Punjab Cavalry, Nos. 1,169, 939, and 1,235. I selected them because, though they suffered undoubtedly from Surra, having the blood parasite, etc., they were mild cases, had been about three weeks on the sick list ; there had been no dropsical swellings ; they fed well, and did not look ill in any way to an ordinary or casual observer ; they seemed in good spirits, and were in good condition. They had been placed upon the sick list only because the mucous membranes were yellow, with petechiæ, which the salootri had discovered in the course of his inspections. No medicine had hitherto been given, for I had requested, before I went to Dera Ismail Khan, that the cases submitted to me should not be complicated by the action of medicine, as I wished to study the disease in its natural course. I tried carbolic acid in these cases, because it has been recommended for parasitic blood diseases, though I have no confidence whatever in it for such cases. I think the blood, impregnated enough

with it to kill the parasites and their germs or ova, would be fatal to the patient also. The few cases recorded of recovery after its use in Anthrax have not, I believe, been assisted by it. However, I thought it was my duty to give it a trial in this disease, as I could not suggest anything better. A memorandum from the officer commanding, dated the 3rd inst., reports as follows :—Out of the four horses treated with carbolic acid and glycerine, two have died : No. 337 (case 4, Appendix D) died on 29th October, and No. 1,669 died 31st October. The two horses remaining under treatment are daily becoming thinner and weaker, and no benefit appears to be derived.

The Parasite.—I made the following notes when observing it at Dera Ismail Khan, with Swift's best lenses—$\frac{1}{5}$, $\frac{1}{8}$, and $\frac{1}{12}$ (immersion). The $\frac{1}{5}$ is the best lens to see its movements and operations : the higher powers should not be used until it becomes quiet. In order to see all its operations, it is better to examine it in the serum after the blood has coagulated, or in defibrinated blood, and not to put too little on the slide, or else the blood dries up quickly, and the parasite will wriggle while he can, to get out ; but he will not attach himself to the corpuscles in the manner I shall presently describe. Put a fair drop of fresh serum on the slide ; lay the thin cover on ; press it *moderately*, so as to squeeze some of the blood from under the cover all round ; retain the pressure a short time, until what has been so pressed out coagulates or dries up, and forms a good temporary cement which will keep the serum within from drying. The movements of the parasite can then be watched for many hours. If it be required to see it at rest, then a very thin layer of blood should be put on the slide, and allowed to thicken a little before covering it. The shape of the parasite, however, will be found to differ at rest, if the blood thickens soon, from what it is if the serum be kept fluid long, and the parasite die slowly. In the latter case the body spreads out and flattens ; in the former it remains contracted.

When I first saw it I thought for a moment it was some form of spirillum, but the next instant convinced me it was not.

Shape.—It has an apparently round body, when it is fresh and active, which tapers in front to a neck ending in a blunt head,

and behind it has a tapering tail from which there extends a long slender lash, so fine that it can seldom be seen. Its outline can be made out sometimes for an instant when its motion in the serum refracts light, but its presence may be inferred from seeing the corpuscles quivering at a distance from the visible part of the tail. Sometimes the head appears a very little thicker than the neck; but, as a rule, I failed to see any difference, and sometimes I thought it looked smaller. Probably its size is not always the same relatively. In one or two instances, one particularly, when the body was sunk in the serum, and the head facing towards the covering glass, I saw what appeared like a circlet of short hair-like pseudopods. I only saw it for a few seconds, as the head sank out of focus, and I was not able to make a reliable observation; but I mention it in order that my impression may be corrected or confirmed by future observers. When it dies slowly in serum, its body flattens out. After many hours of watching it closely in all its changes of form and movements, I came to the conclusion that it has two fin-like papillæ on each side, one near where the neck commences, and another near where the tail begins. In only very few instances was I able to see the four at once; but whether I saw one, two, or three, they were always in the same relative positions. Sometimes they could be seen projecting from the body; at other times they were seen as refracting spots on the body. Perhaps they are pseudopods also.

Motion.—Undulatory, eel-like, and as a rule wonderfully active. The body alters its shape in its movements, shortening and thickening, lengthening and becoming more slender, so that it is most difficult to estimate its real size. Its progress is almost always in the direction of the blunt end, which I therefore called the head; though it goes in the reverse direction sometimes, when pulling at a corpuscle.

Size.—Its *visible* length ordinarily appears on the average to be about three or four times the diameter of a white corpuscle, and the average diameter of its body about one-eighth or one-tenth that of a white corpuscle. That is how it appeared to me and others, but I had no micrometer to measure it with. There is much of its tail end that is not ordinarily visible.

Colour.—White, like a spermatozoon.

Actions.—It has a wonderful elective affinity for the red corpuscles, but none for the white, as seen when there are many of the latter in the field. At a certain stage of its development it is constantly worrying the red corpuscles. The first exclamation made by every one who saw the parasites at that stage was to this effect: "Oh, the little villains! see how ferociously they attack the red corpuscles!" Dr. Haig remarked that, whatever family it belongs to, its most appropriate specific designation is *Ferox.* I mention this because, to one who sees them for the first time in this stage, the *apparent* ferocity is a most impressive and distinguishing characteristic. They always fasten to the red corpuscles by their blunt end, never by any other part; so it is not an accidental attachment. They look as if they went to the corpuscle for a definite purpose, fasten to it, and shake it about in the serum in a very wonderful manner. I have often seen two fasten to one corpuscle, pull it out of shape, and one of them would break a particle off, then go about with the fragment, which made it look something like a bull-headed spermatozoon. On one occasion I saw four of them fasten on one corpuscle, and pull in contrary directions for some time, until they broke it up. When they thus fasten to a corpuscle they seem to tug hard at it, and then they lash their tails with unusual rapidity. I have seen them pull a corpuscle right across the field, and one I saw doing so *backwards* a considerable distance *against the stream* when the stage was inclined; but as a rule they move forwards. Sometimes, when they go off with a fragment of corpuscle, they wriggle in all manner of vermicular contortions, as if they wished to get rid of it. When the corpuscles are in *rouleaux*, the parasites crawl over them and seem to try to push between them: in this way they often separate the end corpuscles of the *rouleau* from the others. They show a great preference for the concave side of the disc, rather than the edge. What their object is in fastening to the corpuscles, I cannot tell; but it is strongly suggestive of sucking. I have frequently seen one of them suddenly turn aside towards another, and, I sometimes thought, bring him to by whipping his tail round him, and then fasten to him lengthwise; after that both would wriggle about very actively

together, and look like one long body. I have not been able, owing to their rapid motions, to assure myself in what manner they unite. I am inclined to think that their heads and tails are in the same direction, and over-lapping each other; but Dr. Haig was inclined to think, on the contrary, that they fasten with their tails in opposite directions. What they do it for I do not know, perhaps for copulation; but a combatant officer on one occasion, looking at a fresh drop of blood, and seeing the parasites unite in that manner, exclaimed, "By gad! now two of the little devils are fighting for a piece of corpuscle which one of them had broken off." I mention this because that officer had not been told before that they did sometimes fasten together; so that he was not in that state of mind called "expectant attention." He said afterwards that "he had observed a small particle of corpuscle at the head of one of the two before the other rushed up to tackle him."

With reference to the Surra parasites, which I transferred from the horse to the dog (*vide* Appendix I.), and which I submitted to Dr. Lewis for his opinion as to what they are, I received the following communication from him on the 8th instant:—"They appear to be very closely allied to the flagellated parasites which were detected by myself in a considerable number of apparently healthy rats during 1878, and which were described shortly afterwards in a report on Micro-organisms in the Blood, published in this office Annual Report for 1877. I have not been able to examine the organisms which you have found with sufficient care as yet to venture to express an opinion as to whether or not they are specifically identical with those found in the blood of rats; but as you have been so kind as to make over the puppy to me, I shall take an early opportunity of comparative examinations of them."

Dr. Lewis went to Calcutta for winter duties on the day I received the above, and I have written to tell him, that if he can find a rat with these organisms in its blood (I believe he found many of them at Calcutta), I will inoculate a pony with it, to see whether Surra can thus be produced.

Appendix A.

Case 1.—*Bay Mare. Aged* 19. *Regimental No.* 298.

September 19*th*, 1880.—*Previous History.*—This mare went to Draband outpost on the 29th November, 1879. Returned to head-quarters, Dera Ismail Khan, 28th February, 1880. On the 1st April went to Tonk outpost, and remained there until the 30th May, 1880. Returned to Dera Ismail Khan 10th June, 1880, and was admitted on the sick report for Surra, 21st August, with the following symptoms (related by the salootri) :—"Sluggish gait ; small appetite for grain, but ate grass with relish ; great thirst ; urine normal in colour, but increased in quantity ; some reddish substance visible on the dung, with unpleasant odour ; visible mucous membranes yellowish ; dark red spots on the inner side of eyelids ; slight swelling of the legs ; respirations increased."

The treatment adopted was as follows :—"Take of Cinchona Bark, four drachms ; Spirit Nitre, one ounce ; Sulphuric Acid, diluted, one drachm ; Water, twelve ounces. Mix. One-ninth part to be given three times daily. This did not appear to do good, and the following was tried :—Take of Tincture of Iron per chloride, four drachms ; Chiratta Powder, four drachms ; Water, twelve ounces. Mix. One-fourth part to be given twice daily. When the breathing was heavy, two drachms of Carbonate of Ammonia were given in a pint of water."

Present Symptoms. Morning.—Pulse 54, soft and very thrilling ; respirations 30, short and irregular ; auscultation and percussion sounds normal ; temperature within the rectum 100° ; tongue pale and moist ; eyes watery, with claret-coloured petechiæ on the conjunctiva, principally on the membrana nictitans ; all visible mucous membranes of a pale yellow colour ; very thirsty ; feeding fairly well, taking six pounds of grain daily, and the full allowance of grass ; skin dry and bound to the ribs ; the gait stiff and weak ; œdema of all the legs. Urine and dung not shown. In a few minutes after I had made the above notes, just as I was coming away, she showed symptoms of abdominal pain, became restless, lying down and soon up again, etc., which the

salootri said was a sure sign that she would not live long, for it was not uncommon for the cases to have such restlessness off and on in the latter stage and increasing up to the end. This is the first time this mare has shown pain. *Evening.*—Has had no pain since noon. Pulse 56; respirations 36; temperature 101$\frac{3}{5}$°; urine alkaline, specific gravity 30, there is no trace of albumen, colour normal; dung normal; fed up. Examined the blood under microscope, the light not good; found nothing abnormal.

September 20th. Morning.—Pulse 50; respirations 14, short; temperature 100$\frac{1}{5}$°; urine specific gravity 35, alkaline, free from albumen, sediment normal. *Evening.*—Pulse 52; respirations 28; temperature 101$\frac{2}{5}$°; urine specific gravity 26; dung normal; feeding well.

September 21st. Morning.—Pulse 46; respirations 9, not so short as usual; temperature 100°; urine specific gravity 35, alkaline, free from albumen; dung normal. *Evening.*—Pulse 35; respirations 30; temperature 102°; urine specific gravity 34; fed up.

September 22nd. Morning.—Pulse 56; respirations 12; temperature 101$\frac{1}{2}$°; urine specific gravity 18. Blood examined for the first time in good light by the microscope; parasites found in great numbers, exceedingly active. I shall give a fuller account of them elsewhere. *Evening.*—Pulse 68; respirations 40; temperature 103$\frac{2}{5}$°; urine specific gravity 30; fed up during the day.

September 23rd. Morning.—Pulse 58; respirations 14; temperature 101°; urine specific gravity 30, has no albumen. Parasites continue active in the blood. *Evening.*—Pulse 90; respirations 68; temperature 105$\frac{1}{5}$°; urine specific gravity 22; fed well during the day.

September 24th. Morning.—Pulse 68; respirations 18; temperature 102$\frac{2}{5}$°; urine specific gravity 20, more high-coloured, slightly albuminous, alkaline. Parasites in blood less active and fewer. *Evening.*—Pulse 64; respirations 48; temperature 102$\frac{2}{5}$°; urine specific gravity 22, not so high-coloured as in the morning; fed well.

September 25th. Morning.—Pulse 49; respirations 12, laboured; temperature 100°; urine specific gravity 28, alkaline, slightly albu-

minous. Examined a drop of fresh-drawn blood carefully, found only one parasite, which appeared thicker in the body than what I saw before; examined a second drop, and found no parasite in it; examined a third drop, got from another fresh cut, and found no parasite. The white corpuscles are much increased in number. *Evening.*—Pulse 58; respirations 42; temperature 102°; urine specific gravity 30; fed well during the day.

September 26th. Morning.—Pulse 50; respirations 10; temperature 100°; urine specific gravity 30, alkaline, free from albumen. *Evening.*—Pulse 66; respirations 45; temperature 102°; urine specific gravity 22.

September 27th. Morning.—The animal is greatly emaciated, though she feeds so well, and there is no chance of her recovery. She was therefore destroyed, in order to investigate the disease *post-mortem.* Large quantity of clear serum found in the abdominal cavity, and a slight velvety fluff of lymph upon the parietal peritoneum. No inflammation. Subperitoneal connective tissue very yellow. Liver impregnated throughout with old calcareous degenerations of cysticerci larvæ from the size of a pea down. The organ was otherwise perfectly healthy in structure. The stomach and intestines were opened, and examined from end to end, and found normal. There were a few subperitoneal petechiæ on the free border of the small colon; these were examined by the microscope; nothing but a sanguineous exudate was found. Scrapings and sections of the kidneys were examined by the microscope; nothing abnormal was found in them. Spleen, heart, and lungs were also healthy. Parasites found in the blood, but not nearly so many as at first.

Remarks.—It is worthy of note in this case that the urine became slightly albuminous with the disappearance of the parasites from the blood. I found nothing abnormal in the deposit from the urine, examined carefully for "casts" of the urinary tubules of the kidney. Dung was always normal. The patient showed no symptom of pain since the morning of the 19th. The great difference observed between the number of respirations morning and evening I attribute to the heat of the sun, which came direct upon the horses in the afternoon. The temperature within a cool bungalow was about 82° every day.

Appendix A.

Table showing the Variations in the Pulse, Temperature, Urine, and Blood of Case 1.

Date. 1880.	Morning or Evening	Pulse.	Temperature of Rectum.	Urine.		Blood, etc.
				Sp. Gr.	Albumen	
Sept. 19.	M.	54	100	—	—	
„ 19.	E.	56	101 3/5	·30	Abst.	
„ 20.	M.	50	100 1/5	·35	„	
„ 20.	E.	52	101 2/5	·26	„	
„ 21.	M.	46	100	·35	„	
„ 21.	E.	35	102	·34	„	
„ 22.	M.	56	101 1/2	·18	„	Many parasites in blood. First examination with good light.
„ 22.	E.	68	103 2/5	·30	„	
„ 23.	M.	58	101	·30	„	Ditto.
„ 23.	E.	90	105	·22	„	
„ 24.	M.	68	102	·20	Little.	Fewer, and less active.
„ 24.	E.	64	102 2/5	·22	—	
„ 25.	M.	49	100	·28	Little.	Only one found in three drops of blood. White corpuscles much increased in number.
„ 25.	E.	68	102	·30	—	
„ 26.	M.	50	100	·30	Abst.	No examination.
„ 26.	E.	66	102	·22	—	
„ 27.	M.		Destroyed.			Parasites found in the blood, but not nearly so many as on the 22nd.

Note.—The abnormal increase of temperature and pulse in the evening.

Appendix B.

Case 2.—Dun Gelding. Aged 8.

September 19th, 1880.—*Previous History.*—This is a large-sized "pony," belonging to a grass-cutter. Was at Jutta outpost from 4th September, 1879, to 30th January, 1880, and at Tonk outpost from 1st February until 19th August last. Was first reported sick of Surra on the 13th instant, with the following symptoms (as described by the salootri) :—"Feverish heat of body ; eyes rather yellow, with red spots on the lids ; nostrils rather stuffed up with mucus ; breathing quick ; urine excessive, of normal colour at first, becoming red on the third day ; thirst

excessive; swelling of the legs and abdomen. No medicine given."

Present Symptoms. Morning.—Pulse 50, soft, having no thrill like that of case 1; respirations 10, regular and with normal sounds; temperature 103°; eyes very heavy, expression watery, œdema of conjunctiva, claret-coloured petechiæ on the membrana nictitans; the visible mucous membranes generally of a dirty yellow colour; mucous discharge from the nose; mouth moist; much œdema of the sheath, belly, and legs; gait weak and stiff; eats 4 lbs. corn daily, with a full allowance of grass; very thirsty; in low condition. *Evening.*—Pulse 56; respirations 40; temperature 105$\frac{2}{5}$°; urine specific gravity 28, alkaline and albuminous, of a reddish colour; dung normal.

September 20th. Morning.—Pulse 47; respirations 8; temperature 102$\frac{2}{5}$°; œdema of sheath and abdomen increased; urine specific gravity 32, alkaline and albuminous; deposit from yesterday's urine shows no casts or anything abnormal. *Evening.*—Pulse 64; respirations 46; temperature 106$\frac{2}{5}$°; urine specific gravity 26, alkaline and albuminous; feeding.

September 21st. Morning.—Pulse 46; respirations 9; temperature 102°; urines pecific gravity 30, alkaline, albuminous, and reddish in colour. *Evening.*—Pulse 50; respirations 40; temperature 105$\frac{2}{5}$°; urine specific gravity 22, alkaline, albuminous, and reddish; fed up 5 lbs. of grain, with full allowance of grass; œdema increased everywhere, and the petechiæ more marked.

September 22nd. Morning.—Pulse 46; respirations 9; temperature 103°; urine specific gravity 28, alkaline and albuminous. Blood examined by microscope, and parasites found in great numbers, same as in case 1; white corpuscles much increased in number. *Evening.*—Pulse 53; respirations 48; temperature 104°; urine specific gravity 20, alkaline and albuminous; œdema increasing.

September 23rd. Morning.—Pulse 50; respirations 11; temperature 104°; urine specific gravity 30, alkaline and albuminous; swelling of the glands near side of the jaw; very tender, so that the artery cannot be felt on that side. *Evening.*—Pulse 52; respirations 52; temperature 104°; looks more dejected; the eyes discharge mucus; the petechiæ are more diffused, and not so

claret-coloured, but more of a dirty brick-red colour; feeds as usual.

September 24th. Morning.—Pulse 40; respirations 11; temperature 100° (observation repeated); urine light colour, specific gravity 22, more alkaline and less albuminous, contains a larger amount of phosphates; swelling of the gland increasing and very tender. *Evening.*—Pulse 58; respirations 50; temperature 104°; urine specific gravity 30, alkaline and albuminous; mouth keeps moist, and the animal feeds as usual; drinks much; becoming wretchedly thin.

September 25th. Morning.—Pulse 45; respirations 10; temperature $100\frac{2}{5}°$. Examined a fresh drop of blood, could find only two parasites on the slide, but there is a further increase in the number of white corpuscles, and a large quantity of granular matter in the serum, also a great number of small shapeless particles of red corpuscles, from half the size of a healthy corpuscle downwards; examined another drop of fresh blood, and could find only one parasite; examined a third drop, and failed to find one. Urine specific gravity 28, alkaline, albuminous, colour normal. Lay down last night for the first time since he came into the sick lines, was down for three or four hours; showed no pain; œdema less this morning. *Evening.*—Pulse 52; respirations 50; temperature $103\frac{2}{5}°$; urine specific gravity 32, alkaline, albuminous.

September 26th. Morning.—Pulse 45, smaller and weaker; respirations 11; temperature $100\frac{4}{5}°$; urine specific gravity 31, more alkaline, but has less albumen, colour normal; œdema is still less than yesterday. *Evening.*—Pulse 56; respirations 48; temperature 104°; urine specific gravity 36, high coloured, alkaline and albuminous; feeding better; œdema subsiding.

September 27th. Morning.—Pulse 46; respirations 14; temperature 100°; no urine kept. *Evening.*—Pulse 64; respirations 54; temperature 105°; urine specific gravity 32, high coloured, albuminous, and alkaline; fed up.

September 28th. Morning.—Pulse 48; respirations 12; temperature $101\frac{2}{5}°$; urine lost; refusing food. *Evening.*—Pulse 68; respirations 54; temperature 106°; urine very high coloured, and contains much albumen; abscess under the jaw.

September 29th. Morning.—Pulse 44; respirations 9; temperature $100\frac{2}{5}°$; urine specific gravity 24, high coloured, alkaline, albuminous. One drop of blood examined, and only one parasite found, which was very active.

September 30th. Morning.—Destroyed for *post-mortem* examination. A large quantity of clear fluid found in the abdominal cavity, with a slight velvety fluff of lymph on the parietal peritoneum, less than in case 1; no inflammation. *Filaria Papilosa* found on the mesentery. Stomach and intestines opened throughout, and found normal, except a number of submucous petechiæ on the small intestines and small colon, which I found under the microscope to be a simple sanguineous exudate like the petechiæ of the conjunctiva, and what I also found common in the vagina of mares suffering from this disease. They had no relation whatever to the intestinal glands. The kidneys, liver, spleen, lungs, and heart were found healthy. Parasites in the blood, but not so many as on the 22nd.

Remarks.—Note that in this case albumen was found in the urine throughout, and it appeared to have no relation with the disappearance of the parasite from the blood, as case 1 led one to suppose. The structure of the kidney was perfectly normal under the microscope, and I found no casts in the urine. The structure of the liver was also perfectly normal, though all the mucous membranes were tinged with the yellow colour of bile. I examined these organs with great care in this case, as well as in case 1, directly after death. The weather was exceedingly hot, but I had plenty of ice in large felted baskets, to preserve the organs without any *post-mortem* changes until I examined them. (That is, while I was examining one organ the others remained in ice.) The increased number of the respirations in the evening, compared with the morning, was as remarkable in this as in case 1, and in all other cases I observed, and was due, I have no doubt, to the effect of the exposure to the hot sun. I examined the dung carefully morning and evening, for worms, etc., and found nothing abnormal. With regard to the swelling of the submaxillary glands and discharge of mucus from the nose, I found this in four cases only out of fifty.

Appendix B.

Table showing the Variations in the Pulse, Temperature, Urine, and Blood of Case 2.

Date. 1880.	Morning or Evening	Pulse.	Temperature of Rectum.	Urine.		Blood, etc.
				Sp. Gr.	Albumen	
Sept. 19.	M.	50	103	—	—	
„ 19.	E.	56	$105\frac{2}{5}$	·28	Prsnt.	
„ 20.	M.	47	$102\frac{2}{5}$	·32	„	
„ 20.	E.	64	$106\frac{2}{5}$	·26	„	
„ 21.	M.	46	102	·30	„	
„ 21.	E.	50	$105\frac{2}{5}$	·22	„	
„ 22.	M.	46	103	·28	„	First examination of blood with good light. Many parasites present. White corpuscles abnormally increased in number.
„ 22.	E.	53	$104\frac{4}{5}$	·20	„	
„ 23.	M.	50	104	·30	„	Blood not examined.
„ 23.	E.	52	104	—	—	Ditto.
„ 24.	M.	40	100	·22	Prsnt.	Ditto.
„ 24.	E.	58	104	·30	„	Ditto.
„ 25.	M.	45	$100\frac{2}{5}$	·28	„	Only two parasites found. White corpuscles continue increased in number, with much granular matter, and red particles in the serum.
„ 25.	E.	52	$103\frac{2}{5}$	·32	„	
„ 26.	M.	45	$100\frac{4}{5}$	·31	„	Blood not examined.
„ 26.	E.	56	104	·36	„	Ditto.
„ 27.	M.	46	$100\frac{2}{5}$	—	—	Ditto.
„ 27.	E.	64	$105\frac{1}{5}$	·32	Prsnt.	Ditto.
„ 28.	M.	48	$101\frac{2}{5}$	—	—	Ditto.
„ 28.	E.	68	$106\frac{1}{5}$	—	Prsnt.	Ditto.
„ 29.	M.	44	$100\frac{2}{5}$	·24	„	Only one parasite found. It was active.
„ 30.	M.		Destroyed.			Parasites found in the blood, but not so many as on the 22nd.

Note.—The abnormal increase of temperature and pulse in the evening.

Appendix C.

Case 3. *Regimental No.* 866. *Brown Mare. Aged* 9.

September 25th, 1880. *Evening.*—This mare was brought to the sick lines when I was examining the other cases, and I was told she was only just reported as suffering from the first symp-

toms of Surra. Her history was that on the 8th March last she went to Khuttee, about fifteen miles from Dera Ismail Khan, and returned to head-quarters on the 29th April. On the 5th May she went to Tonk outpost, on the 5th June to Zam outpost, on the 15th August returned to Tonk, and on the 2nd instant she returned to head-quarters, Dera Ismail Khan.

Present Symptoms.—Pulse 58; respirations 36; temperature 105°; urine not shown. Blood not examined, because my eyes were already overworked, and the glare from the sun was great. Conjunctiva œdematous, with several small petechiæ; lachrymation excessive; all visible mucous membranes yellow, the vagina especially so, in which also were many deep-coloured petechiæ; mouth dry, with great thirst; slight œdema of legs; gait weak and stiff; eats nothing. The general condition is very fair, as fat as any working horse should be, but not plethoric.

September 26th. Morning.—Pulse 50; respirations 11; temperature 101$\frac{4}{5}$°. Parasites found swarming in the blood, and very active; white corpuscles in great numbers, a large increase in the number of the very granular white corpuscles. Refuses grain, eats a little grass; is very thirsty. Œdema of hind legs increased since yesterday; mouth moist (before any drink was given); urine specific gravity 50, alkaline, has no albumen, colour normal; dung normal. *Evening.*—Pulse 66; respirations 38; temperature 106°; urine specific gravity 41, normal colour, free from albumen. Eats grass freely, refuses grain.

September 27th. Morning.—Pulse 60; respirations 10; temperature 104°. No urine kept. Refuses grain, eats grass, is very thirsty. The dirty yellow colour and petechiæ, which are characteristic in the conjunctiva of this disease, are also very marked in the mucous membrane of the vagina of this mare. *Evening.*—Pulse 62; respirations 30; temperature 105°; urine specific gravity 40, no albumen, alkaline, colour normal. Refuses grain, eats grass slowly; does not lie down. I am told that the patients suffering from this disease seldom do lie down night or day.

September 28th. Morning.—Pulse 49; respirations 8; temperature 101$\frac{1}{5}$°; œdema at the sternum; off feed; thirsty,

mouth moist; urine alkaline, and contains much albumen, specific gravity 38, high-coloured. *Evening.*—Pulse 62; respirations 16; temperature 104$\frac{4}{5}$°; œdema at the sternum increased; urine specific gravity 26, albuminous, less colour.

September 29th. Morning.—Pulse 50; respirations 10; temperature 100$\frac{3}{5}$°; urine specific gravity 34, albuminous, alkaline, colour normal. No parasite found in a drop of blood taken from the off side of the neck, but one very active found in a drop taken from the near side. Œdema extending backwards from sternum. Patient was down for two hours last night, showed no pain. *Evening.*—Pulse 56; respirations 32; temperature 103$\frac{2}{5}$°. Fed up six pounds of grain and full allowance of grass.

September 30th. Morning.—Pulse 60; respirations 12; temperature 101°; œdema increasing, feeding. Urine not examined. No evening examination was made. I was too busy in making a *post-mortem* examination and inspecting horses coming in from the outposts.

October 1st. Morning.—Pulse 54; respirations 14; temperature 101$\frac{3}{8}$°; urine specific gravity 32, albuminous and alkaline. Fed up yesterday eight pounds of grain and grass. *Evening.*—Examination not made, too busy otherwise.

October 2nd. Morning.—Pulse 60; respirations 14; temperature 104$\frac{1}{5}$°; œdema increasing; urine specific gravity 32, alkaline, albuminous. Fed six pounds of grain yesterday, besides the grass. She has fallen off in condition wonderfully.

October 3rd. Morning.—Pulse 58; respirations 18; temperature 102$\frac{3}{5}$°. Urine not examined.

October 4th. Morning.—Pulse 62; respirations 14; temperature 103°. Fed up eight pounds corn yesterday, besides the grass. One drop of blood examined, only one parasite found.

October 5th. Morning.—Pulse 64; respirations 14; temperature 103°. Fed up yesterday nearly eight pounds grain. Submaxillary glands very tender and enlarged.

October 6th. Morning.—Pulse 65; respirations 20; temperature 102$\frac{4}{5}$°. Submaxillary glands more enlarged and very tender; the pulse has to be felt at the heart. Passing urine frequently, colour light (not able to examine it further). Œdema of hind legs increasing.

October 7th. Morning.—Pulse 66; respirations 13; temperature $102\frac{1}{5}^{\circ}$. A great number of parasites found in a drop of blood. Fed only four pounds of grain yesterday; is wasting to a skeleton.

October 8th. Morning.—Pulse 60; respirations 22; temperature $103\frac{2}{5}^{\circ}$. Refused grain yesterday, ate grass.

October 9th. Morning.—Pulse 50; respirations 18; temperature $100\frac{2}{5}^{\circ}$. Ate only one pound of grain yesterday, and half allowance of grass.

October 16th. Morning.—I returned last night from the outposts, and find this mare reduced to a wretched "bag of bones," though I am told that for the last three or four days she has eaten eight pounds of grain daily, with the full allowance of grass, Pulse 58; respirations 10; temperature $100\frac{2}{5}^{\circ}$. Œdema has disappeared from the body and fore legs, but continues in the hind legs. One drop of blood examined, no parasite found. The white corpuscles are in great numbers. Many of the red corpuscles, smaller than normal, look like particles of shapeless jelly. There is much granular matter in the serum.

October 18th. Morning.—Destroyed for *post-mortem* examination. Very little serum found in the abdominal cavity. There was a slight velvety fluff of lymph on the parietal peritoneum. No inflammation. The kidneys were pale and sodden-like. Had no time to make a section of these kidneys for microscopic examination. The liver, spleen, heart, and lungs were healthy. The stomach and intestines were opened from end to end, and found healthy. A few parasites were found in the blood.

Remarks.—It should be particularly noted in this case, with regard to the life-history of the blood parasites, that they do not disappear from the blood absolutely when it becomes difficult to find one in a drop of blood, but that when one brood or generation dies there are ova or spores left for the development of another brood. Thus in this case, on the 26th September, the parasites were swarming in each drop of blood. On the 29th only one parasite was found in two drops of blood examined. On the 4th October one parasite only was found in one drop of blood. On the 7th October a great number were found in a drop (that is, there were more than I could count). I was not

able to see the case again from the 9th ultimo to the 16th, when one drop of blood was examined, and no parasite found. It should be noted also that this patient was much more off her feed than is usual in this disease. This is the only case in which the structure of the kidney did not appear perfectly healthy; I therefore consider it was a coincidence, or what might be called an accidental occurrence in the case, and having no special relation with the disease.

APPENDIX C.

Table showing the Variations in the Pulse, Temperature, Urine, and Blood of Case 3.

Date. 1880.	Morning or Evening	Pulse.	Temperature of Rectum.	Urine.		Blood, etc.
				Sp. Gr.	Albumen	
Sept. 25.	E.	58	105	—	—	Blood not examined.
„ 26.	M.	50	101 4/5	·50	Abst.	Parasites in blood swarming. White corpuscles in great numbers.
„ 26.	E.	66	106	·41	„	
„ 27.	M.	60	104	—	—	Blood not examined.
„ 27.	E.	62	105	·40	Abst.	Ditto.
„ 28.	M.	49	101 1/5	·38	Prsnt.	Ditto.
„ 28.	E.	62	104 4/5	·26	„	Ditto.
„ 29.	M.	50	100 3/5	·34	„	Only one parasite found.
„ 29.	E.	56	103 2/5	—	—	Blood not examined.
„ 30.	M.	60	101	—	—	Ditto.
Oct. 1.	M.	54	101 3/8	·32	Prsnt.	Ditto.
„ 2.	M.	60	104 1/5	·32	„	Ditto.
„ 3.	M.	58	102 3/5	—	—	Ditto.
„ 4.	M.	62	103	—	—	Only one parasite found in the blood.
„ 5.	M.	64	103	—	—	Blood not examined.
„ 6.	M.	65	102	—	—	Ditto.
„ 7.	M.	66	102 1/5	—	—	A great many parasites in drop of blood.
„ 8.	M.	60	103 2/5	—	—	Blood not examined.
„ 9.	M.	50	100 2/5	—	—	Ditto.
„ 16.	M.	58	100 2/5	—	—	No parasite found. White corpuscles continue in great number. Many of the red corpuscles smaller in size than normal. More particles. Much granular matter in the serum.
„ 18.	M.		Destroyed.			Few parasites found in the blood.

Note.—The abnormal increase of temperature in the evening.

(To be continued.)

CHRONIC INDIGESTION, DUE TO ULCERATION OF THE STOMACH.

BY J. B. WOLSTENHOLME, M.R.C.V.S., MANCHESTER.

I HAVE forwarded a portion of the stomach of an aged cart-horse for inspection. I had known him for some twelve or eighteen months, and have frequently attended him, he being the subject of chronic indigestion, with irregular appetite, the bowels generally constipated, but very susceptible to purgatives. There was imperfect assimilation, for, though well fed and not overworked, he was always in poor condition. Decomposition of the fæces, on defecation, was much greater than usual, they being very offensive. On the morning of the 29th July, he appeared to be better than usual, and rather greedily ate his first meal. About four p.m. he was in dull pain, and defecated. This, with intervals of ease, continued until the same day in the following week, *i.e.*, August 5th, when, at the point of death, he was destroyed. During this time, with the exception of a little fæces removed with the first enema, nothing more was passed. There was no violent pain; the pulse for the first three days was normal, then it gradually went up 60—120—114, until it reached 132 on the day of death. During this time aloes, Ol lini, enemas, and anodynes, with diluents, and warm fomentations were administered. There was no injection of mucous membranes at first, but they became of a dark-red hue in the later stages. The tongue and mouth were very dry; the rectum was also dry, and quite void of mucus. On *post-mortem* inspection, we found the bowel empty from the rectum to the termination of large colon, but its lining membrane dry, and had small sordes attached. At the terminal portion of the large colon, the ingesta was of the consistence of moderately firm cow-dung, its outer portion being blood-stained through contact with the rather congested mucous membrane. The remainder of the ingesta was pultaceous; no solids in small intestines or stomach, and no inflammatory patches. The heart, when washed, weighed seven pounds, and was fatty; the liver was twenty-one pounds, of a brown clay-colour, very friable, and evidently having undergone considerable fatty degeneration. The stomach was thin

at the cuticular portion, and somewhat hyperæmic at the villous part, due possibly to cathartics; but that which drew my attention most was a chain of ulceration running along the cuticular portion, near to the commencing line of the villous moiety. On further examination, one sees a number of lemon-coloured spots, some a little elevated and peeling off, evidently to become a small ulcer; then on holding the viscus up to the light, a number of points, whiter and less translucent than their surroundings, may be seen. I shall be very pleased if you have time and can examine the same.

[The portion of a horse's stomach forwarded by Mr. Wolstenholme presented the following appearances:—Running parallel to the line of junction of the villous with the cuticular portion, and in the latter coat, was an irregular-shaped chain of ulceration about three inches in length, together with a number of erosions varying in size from a pin's head to that of a sixpenny-piece. The ulcerations forming the chain were somewhat deeper than the latter, and extended as deep as the muscular layer of the stomach. That portion of the cuticular mucous membrane in which they occurred was blanched, firm and thickened from the increased formation of connective tissue, and was more firmly attached to the submucous tissue beneath than the surrounding membrane. It likewise presented a number of cicatrices which, from contraction, had the effect of drawing it up into a variety of folds. From their form and arrangement the larger patch of ulceration appears to have resulted from the smaller ones having become confluent, and were probably caused by bots. Nothing abnormal was observed in the villous portion of the organ, which was coated by a thickish film of slimy mucus, the result perhaps of gastric catarrh.]

SERIOUS INJURIES TO A HORSE: RECOVERY.

BY C. GRESSWELL, M.R.C.V.S., NOTTINGHAM.

ON April 25th a bay six-year-old cart mare, in good condition, belonging to W. Collison, Esq., of Nottingham, in galloping away broke down the closed gates of a railway crossing, and

came in contact with a passing train going at the rate of about twenty-five miles an hour. On examination one hour afterwards, I found the following lesions :—A transverse fracture of the frontal bones throughout their whole breadth, two inches of the orbital process of the left frontal bone being detached. The malar ridge on the left side was broken transversely in two distinct parts. The inferior portion of the orbit, comprising the lachrymal bone, portions of the superior maxillary, and the malar, was fractured in many places, and portions detached. The inferior maxillary was broken at the neck, two inches below the joint, and the jaw consequently movable in any direction. On taking away portions of detached bone, the parietal was found to have a longitudinal fracture, causing a fissure one-eighth of an inch wide, through which the cerebral membranes were visible. The eye was of course invisible, and the jugular vein on the same side was ruptured, with, however, but slight injury to the skin. Pulse 24; temperature 99°. Great dulness and general depression, and animal rapidly becoming semi-comatose. A prognosis of Phrenitis and death, although turning out to be incorrect, was perhaps justifiable. Immediate treatment consisted in the administration of diffusible stimulants, mild dose of physic, thorough cleansing of wounds, with extraction of all loose pieces of bone. In four hours the pulse rose to 32, and temperature 100°. Constant irrigation of the whole head with hot water was then had recourse to, with experimental doses of Bromide of Potassium, ʒij every four hours.

The following day, April 26th, and up to the seventh day, this course was steadily persevered in. The general effect seemed to be to keep the mare in a constant state of quietude. On the third day the temperature rose to 103°, but by the aid of two doses of Sod. Salicyl. this was at once reduced. The pulse invariably stood at 26 to 30 during these seven days. No inflammation of the brain occurred, and the wound assumed a healthy suppurating character. The swelling, however, was very great. On the third day large portions of the frontal, and smaller portions of the inferior floor of the orbit were taken away. The frontal sinus was thus opened at the superior extremity, which opening admitted the entrance of three fingers. The temperature of the

water used for irrigation *was gradually reduced*, until nothing but cold water was applied. After the seventh day the Bromide was discontinued, and the pulse rose within thirty-six hours to 40, and temperature 100°. During the whole of the seven days the mare showed no inclination to drink anything, save about two pints a day of cold water. No gruel of any description could she be induced to drink; and of course eating was out of the question, on account of fracture of the jaw. She had administered to her, daily, from one to two pounds of finely chopped raw beef in the shape of balls. At the end of the seventh day she began slowly to take a little nourishment herself, in the form of thick oatmeal gruel, with chopped carrots; and gradually but surely she took different varieties of food, and in greater quantities. The meat balls were discontinued gradually. Cold water irrigation, with varied dressings of Acid Carb., Sol. Arg. Nit., Sol. Pot. Permang., Zinci Chlorid. Iodoform, effected a cure in five weeks from the date of the accident. On May 12th the frontal sinus was trephined, on account of an accumulation of pus, and several bone sloughs, belonging to the superior maxillary, extracted.

The principal interest connected with this case I take to be is the beneficial action of Bromide of Potassium in such large doses. The injuries were so extensive that inflammation of the brain seemed almost a certainty, and to the beneficial action of Pot. Bromid. must the success of the case be attributed. Constant irrigation with water, gradually lowered as to temperature, had likewise, I think, a splendid effect. Another point of interest lay in the beautiful union that took place in the lower jaw.

After this practical experience, I think it may safely be stated now that a horse may easily be kept alive, and that, too, with very little trouble, on minced flesh. This mare for seven days had literally nothing but meat, and for the next week very little in addition. The details of the treatment of the wound as to surgery, syringing, etc., were such as recommended themselves from day to day, the only point of interest being the bursting of the temporal artery on the sixth day, which caused considerable danger at the time, but which was happily soon overcome. The mare has now been at regular work since June 7th.

ABSCESS IN THE PELVIC CAVITY.

BY JAMES WEBB, M.R.C.V.S., BISHOP'S STORTFORD, LATE VETERINARY SURGEON IN THE ROYAL HORSE ARTILLERY.

In November of last year, C. Stacey, Esq., of Wickham Hall, in this neighbourhood, requested me to attend a roan cart gelding, four years old, that was seized with what he supposed to be something more than ordinary Colic, as the animal groaned and strained very violently.

When I arrived I found the patient rolling about and groaning; and upon rising, straining as if to defecate, but ineffectually. After administering a hypodermic injection of Liq. morphiæ *et* atropiæ, which quickly eased the pain and calmed the animal, I explored the rectum, which contained only a very small quantity of fæces; but I detected a tumefaction immediately beneath the rectum, which at first I thought must be the bladder very distended. I pressed upon it, thinking perhaps it might induce the animal to micturate, but it had no such effect. I administered an oleaginous draught and an enema of warm water, the latter being very soon rejected, and with great pain. Between the paroxysms he would feed as if nothing was the matter. On visiting my patient in the afternoon, the attendant said the horse had been easy until a short time before I arrived, when the pain became as intense as before. I adopted the same treatment; beside which, I introduced a catheter into the bladder, and evacuated about a quart of urine, but without any diminution in the calibre of the swelling. I now came to the conclusion that the swelling was a tumour of some description. So the case continued for four days—the patient sometimes in great agony, at other times apparently well to look at. He ate bran and linseed mashes, and drank linseed gruel freely. But the swelling kept increasing in size, so that the horse could not defecate without the assistance of some one to remove the fæces mechanically; and to render them pultaceous enemas of warm water were frequently given, besides an occasional dose of Ol. lini. On the fifth day, finding my patient becoming worse, and the enlargement increasing so rapidly, I feared it was an abscess which, if the animal lived long enough, would burst either in the abdominal cavity,

giving rise to Peritonitis or Pyæmia; or, if it opened into the rectum, would cause a fistulous wound in it. So, having explained this to the owner, he consented to allow the horse to be operated upon. The operation I performed as follows:—I introduced a catheter into the bladder, and withdrew its contents; then passed my left hand (having a trocar about a foot in length, and the eighth of an inch in diameter, concealed under it) about five inches into the rectum, at which part I pierced in a downward direction through its walls, this being the most prominent part of the swelling. I now withdrew my hand, and likewise the stiletto of the trocar; then fixed the nozzle of a powerful syringe in the free end of the cannula, and drew the piston of the syringe out slowly. I then removed the syringe from the cannula, and found the former containing a quantity of very fœtid pus, of about the consistency of cream. Filling the syringe with warm water, I injected it into the cannula, and again withdrew it, whereupon a continuous stream of most offensive smelling pus flowed from the cannula for fully twenty minutes. After this ceased to flow, I kept injecting warm water containing a little Acid. carbolic. into it, until the fluid which returned became as clear as before I injected it.

I then removed the cannula, and ordered that the patient should have laxative diet, and warm water enemata for a few days. The animal never afterwards manifested any pain or reappearance of the abscess.

MALFORMATION OF THE PENIS OF A BULL.

BY KIRTLAN SMITH, M.R.C.V.S., LOUTH, LINCOLNSHIRE.

THE subject of this communication had, when acquired by its present owner, Mr. Chas. Gillott, of this town, a swelling on the left side of the abdomen, in a line with the stifle. The vendor, however, had warranted it "to come all right." A few weeks afterwards, the swelling extended over the whole abdomen, and up towards the shoulder, with symptoms of mortification around the part first affected. The groom of a veterinary surgeon was at this stage called to see the animal. He made a puncture

near the median line of the abdominal integument, upon which there escaped a large quantity of a fluid like blood and water. This fluid was supposed by the owner to be urine, as the animal had been observed by a neighbour to draw his penis, apparently with great difficulty, three or four days before, and was not known to have micturated again up to the time of the operation. In two days more, a large piece of integument sloughed off the left side of the abdomen, the slough extending from the prepuce to the symphisis pubis. The bull now presents its penis uncovered, and in two portions; one part going in a natural direction to the prepuce, but having as an offshoot the other part about five inches long, protruding laterally, and through which the animal micturates. This it does in an unnatural manner, and to quote the owner's words, "like the waterworks going off." The animal is greatly emaciated. If it is slaughtered I shall be happy to state more fully the condition of the abnormal parts.

Editorial.

PROTECTIVE INOCULATION FOR TRANSMISSIBLE DISEASES.

The recent advance made in the study of the pathology of certain transmissible and very fatal diseases of animals, opens up a new line of research and experimentation, and revolutionises to a startling degree our notions as to the nature and etiology of these maladies, but still more so, perhaps, our views with regard to their prevention—at least in their most deadly form. It is true that protective inoculation has been, during many years, more or less successfully practised for the Contagious Pleuro-pneumonia of cattle, and under conditions which, while it prevented animals being attacked with the disorder, rendered it comparatively innocuous, so far as injury to health was concerned. The discovery of microscopical organisms in Anthrax, and the experiments which clearly demonstrated that they were the active agents in producing the disease, had, however, a wonderful result for pathology and preventive medicine. Pasteur, whose previous researches on the silk-worm disease and fermentation had done so much in this direction, has led the van, in conjunction with our professional colleagues, Professors Chauveau and Toussaint, in defining the conditions upon which protective inoculation may be most effectively and safely resorted to, in several of the scourges of animals, and particularly in the so-called fowl-cholera and Anthrax. From the results already acquired, there can scarcely remain any doubt

that in the laboratory the germs of these diseases can be so cultivated that their virulency is all but destroyed; so that when inoculated in healthy creatures they scarcely produce any perceptible disturbance, though they ensure immunity from a future attack of the deadly germs. This artificial cultivation or attenuation of the virus of destructive disorders, so that by inoculation with it these no longer need be feared, is a subject fraught with the deepest importance, not only to animal but to human medicine, and is only second in point of value to the discovery of means by which the germs of disease can be completely and totally annihilated.

In veterinary science especially must it command earnest attention. Already this kind of inoculation is being largely practised for mitigating the ravages occasioned by Anthrax or Splenic Fever among the flocks in France, and in Belgium it appears to be successfully employed in Contagious Pleuro-pneumonia. In our own empire we have terrible diseases which should be easily brought under control in the same manner. In India we have the Cattle Plague (indeed, it constantly prevails throughout Asia), Sheep-pox, Loodianah Disease or Anthrax, and other similar disorders, and in South Africa we have that most destructive of all equine plagues, the Horse-sickness—inoculable and anthracoid in its nature—which sweeps off all the horses from entire districts in a single season, and Contagious Pleuro-pneumonia, destroying the cattle without let or hindrance, from the seaboard to Central Africa, while the same malady prevails almost unchecked in Australia. Then there is Swine-plague, a disease inoculable, and due to a particular germ, which in Europe and America threatens to ultimately exterminate the porcine species. Surely the startling laboratory discoveries of the last few years can be applied on a grand scale, in general practice, in order to bring the long list of animal plagues completely within the power of man, and so get rid of all the anxiety, loss, danger, and embarrassment to nations which their presence ever occasions! Not many years ago the microscope in veterinary medicine was sneered at as a silly toy. Without this wonderful instrument pathology, and even surgery, would have made but little progress, while the science of preventive medicine would scarcely have existed; every day it is throwing a flood of light upon hitherto obscure subjects. We hope and trust that the great expectations raised as to the further application of the germ theory to the transmissible diseases of animals may be fully realised. It is a grand conception, and the result is already a great victory for the scientists, who are sometimes stigmatised by the so-called practical men as "theorists."

Whether by the direct introduction into the blood of very small quantities of virus, as practised by Chauveau, or by inoculation with cultivated or specially modified virus, as carried out by Pasteur and Toussaint, a brilliant prospect is opened out for our future dealings with veritable scourges, and for this we are indebted to the microscope, no less than to experimental pathology.

THE VETERINARY SURGEONS' BILL.

OWING to the state of parliamentary business, through the obstructions raised by certain Irish M.P.'s, and the fact that this Bill was opposed, up to the 20th of August it had not passed through Committee in the Commons. The action of certain members of the profession with regard to the Bill after it had passed the second reading, had largely tended to this result. The unqualified practitioners have found their most powerful allies in our own ranks. Evidence of this will be discovered in our Parliamentary Intelligence.

On August 20th the Bill passed through Committee, and on the 22nd the third reading. Probably before this reaches our readers it will have received the royal assent, and be entered on the Statute Book. Comments must be reserved until next month.

PASTEUR ON THE GERM THEORY OF DISEASE AND ITS PRACTICAL IMPORTANCE.

AT the recent meeting of the International Medical Congress, in London, among the most remarkable of the addresses delivered was that by M. Pasteur, on the Germ Theory of Disease, which possesses more than ordinary interest for veterinary surgeons, and which, for this reason, we reproduce. After alluding to the favourable reception his discoveries had received, he says :—"I am happy to be able to thank you by bringing to your notice a new advance in the study of microbie,* as applied to the prevention of transmissible diseases—diseases which for the most part are fraught with terrible consequences, both for man and domestic animals. The subject of my communication is vaccination† in relation to Chicken Cholera and Splenic Fever, and a statement of the method by which we have arrived at these results—a method the fruitfulness of which inspires me with boundless anticipations. Before discussing the question of Splenic Fever vaccine, which is the most important, permit me to recall the results of my investigations of Chicken Cholera. It is through this inquiry that new and highly important principles have been introduced into science concerning the virus or contagious quality of transmissible diseases. More than once in what I am about to say I shall employ the expression virus-culture, as formerly, in my investigations on fermentation, I used the expressions, the culture of milk ferment, the culture of the butyric vibrion, etc. Let us take, then, a fowl which is about to die of Chicken Cholera, and let us dip the end of a delicate glass rod in the blood of the fowl with the usual precautions, upon which I need not here dwell. Let us then touch with this chaged point some *bouillon de poule*, very clear, but first of all rendered sterile under a temperature of about 115° Centigrade, and under conditions in which neither the outer air nor the vases employed can introduce exterior germs—those germs which are in the air, or on the surface of all objects. In a short time, if the little culture vase is placed in a temperature of 25° to 35°, you will see the liquid become turbid, and full of tiny microbes, shaped like the figure 8, but often so small that under a high magnifying power they appear like points. Take from this vase a drop as small as you please, no more than can be carried on the point of a glass rod as sharp as a needle, and touch with this point a fresh quantity of sterilised *bouillon de poule* placed in a second vase, and the same phenomenon is produced. You deal

* Bacteria or Bacilli.—ED. *V. J.*

† This term is evidently erroneously applied. Protective inoculation should be substituted.—ED. *V. J.*

in the same way with a third culture vase, with a fourth, and so on to a hundred, or even a thousand, and invariably within a few hours the culture liquid becomes turbid and filled with the same minute organisms. At the end of two or three days' exposure to a temperature of about 30° C. the thickness of the liquid disappears, and a sediment is formed at the bottom of the vase. This signifies that the development of the minute organism has ceased—in other words, all the little points which caused the turbid appearance of the liquid have fallen to the bottom of the vase, and things will remain in this condition for a longer or shorter time, for months even, without either the liquid or the deposit undergoing any visible modification, inasmuch as we have taken care to exclude the germs of the atmosphere. A little stopper of cotton sifts the air which enters or issues from the vase through changes of temperature. Let us take one of our series of culture preparations—the hundredth or the thousandth, for instance—and compare it in respect to its virulence with the blood of a fowl which has died of cholera; in other words, let us inoculate under the skin ten fowls, for instance, each separately with a tiny drop of infectious blood, and ten others with a similar quantity of the liquid in which the deposit has first been shaken up. Strange to say, the latter ten fowls will die as quickly and with the same symptoms as the former ten; the blood of all will be found to contain after death the same minute infectious organisms. This equality, so to speak, in the virulence both of the culture preparation and of the blood is due to an apparently futile circumstance. I have made a hundred culture preparations—at least, I have understood that this was done—without leaving any considerable interval between the impregnations. Well, here we have the cause of the equality in the virulence. Let us now repeat exactly our successive cultures with this single difference, that we pass from one culture, to that which follows it—from the hundredth to, say, the hundred and first, at intervals of a fortnight, a month, two months, three months, or ten months. If, now, we compare the virulence of the successive cultures, a great change will be observed. It will be readily seen from an inoculation of a series of ten fowls that the virulence of one culture differs from that of the blood and from that of a preceding culture when a sufficiently long interval elapses between the impregnation of one culture with the microbe of the preceding. More than that, we may recognise by this mode of observation that it is possible to prepare cultures of varying degrees of virulence. One preparation will kill eight fowls out of ten, another five out of ten, another one out of ten, another none at all, although the microbe may still be cultivated. In fact, what is no less strange, if you take each of these cultures of attenuated virulence as a point of departure in the preparation of successive cultures and without appreciable interval in the impregnation, the whole series of these cultures will reproduce the attenuated virulence of that which has served as the starting point. Similarly, where the virulence is null it produces no effect. How, then, it may be asked, are the effects of these attenuating virulences revealed in the fowls? They are revealed by a local disorder, by a morbid modification more or less profound in a muscle, if it is a muscle which has been inoculated with the virus. The muscle is filled with microbes which are easily recognised because the attenuated microbes have almost the bulk, the form, and the appearance of the most virulent microbes. But why is not the local disorder followed by death? For the moment let us answer by a statement of facts. They are these: the local disorder ceases of itself more or less speedily, the microbe is absorbed and digested, if one may say so, and little by little the muscle regains its normal condition. Then the disease has disappeared. When we inoculate with the microbe the virulence of which is null there is not even local disorder, the *naturæ medicatrix* carries it off at once, and here, indeed, we see

the influence of the resistance of life, since this microbe, the virulence of which is null, multiplies itself. A little further, and we touch the principle of vaccination. When the fowls have been rendered sufficiently ill by the attenuated virus which the vital resistance has arrested in its development, they will, when inoculated with virulent virus, suffer no evil effects, or only effects of a passing character. In fact, they no longer die from the mortal virus, and for a time sufficiently long, which in some cases may exceed a year, Chicken Cholera cannot touch them, especially under the ordinary conditions of contagion which exists in fowl-houses. At this critical point of our manipulation—that is to say, in this interval of time which we have placed between two cultures, and which causes the attenuation—what occurs? I shall show you that in this interval the agent which intervenes is the oxygen of the air. Nothing more easily admits of proof. Let us produce a culture in a tube containing very little air, and close this tube with an enameller's lamp. The microbe in developing itself will speedily take all the oxygen of the tube and of the liquid, after which it will be quite free from contact with oxygen. In this case it does not appear that the microbe becomes appreciably attenuated, even after a great lapse of time. The oxygen of the air, then, would seem to be a possible modifying agent of the virulence of the microbe of Chicken Cholera—that is to say, it may modify more or less the facility of its development in the body of animals. May we not be here in presence of a general law applicable to all kinds of virus? What benefits may not be the result? We may hope to discover in this way the vaccine of all virulent diseases; and what is more natural than to begin our investigation of the vaccine of what we in French call Charbon, what you in England call Splenic Fever, and what in Russia is known as the Siberian Pest, and in Germany as the Milzbrand. In this new investigation I have had the assistance of two devoted young *savants*—MM. Chamberland and Roux. At the outset we were met by a difficulty. Among the inferior organisms, all do not resolve themselves into those corpuscle germs which I was the first to point out as one of the forms of their possible development. Many infectious microbes do not resolve themselves in their cultures into corpuscle germs. Such is equally the case with beer yeast, which we do not see develop itself usually in breweries, for instance, except by a sort of scissiparity. One cell makes two or more, which form themselves in wreaths; the cells become detached, and the process recommences. In these cells real germs are not usually seen. The microbe of Chicken Cholera and many others behave in this way, so much so that the cultures of this microbe, although they may last for months without losing their power of fresh cultivation, perish finally like beer yeast which has exhausted all its aliments. The anthracoid microbe in artificial cultures behaves very differently. In the blood of animals, as in cultures, it is found in translucid filaments more or less segmented. This blood or these cultures freely exposed to air, instead of continuing according to the first mode of generation, show at the end of forty-eight hours corpuscle germs distributed in series more or less regular among the filaments. All around these corpuscles matter is absorbed, as I have represented it formerly in one of the plates of my work on the diseases of silkworms. Little by little all connection between them disappears, and presently they are reduced to nothing more than germ dust. If you make these corpuscles germinate, the new culture reproduces the virulence peculiar to the thready form which has produced these corpuscles, and this result is seen even after a long exposure of these germs to contact with air. Recently we discovered them in pits in which animals dead of Splenic Fever had been buried for twelve years, and their culture was as virulent as that from the blood of an animal recently dead. Here I regret extremely to

be obliged to shorten my remarks. I should have had much pleasure in demonstrating that the anthracoid germs in the earth of pits in which animals have been buried are brought to the surface by earthworms, and that in this fact we may find the whole etiology of disease, inasmuch as the animal swallow these germs with their food. A great difficulty presents itself when we attempt to apply our method of attenuation by the oxygen of the air to the anthracoid microbes. The virulence establishing itself very quickly, often after four-and-twenty hours in an anthracoid germ which escapes the action of the air, it was impossible to think of discovering the vaccine of Splenic Fever in the conditions which had yielded that of Chicken Cholera. But was there, after all, reason to be discouraged? Certainly not; in fact, if you observe closely, you will find that there is no real difference hetween the mode of the generation of the anthracoid germ by scission and that of Chicken Cholera. We had therefore reason to hope that we might overcome the difficulty which stopped us by endeavouring to prevent the anthracoid microbe from producing corpuscle germs and to keep it in this condition in contact with oxygen for days, and weeks, and months. The experiment fortunately succeeded. In the ineffective (*neutre*) *bouillon de poule* the anthracoid microbe is no longer cultivable at 45° C. Its culture, however, is easy at 42° or 43°, but in these conditions the microbe yields no spores. Consequently it is possible to maintain in contact with the pure air at 42° or 43° a *mycélienne* culture of bacteria entirely free of germs. Then appear the very remarkable results which follow. In a month or six weeks the culture dies—that is to say, if one impregnates with it fresh *bouillon*, the latter is completely sterile. Up till that time life exists in the vase exposed to air and heat. If we examine the virulence of the culture at the end of two days, four days, six days, eight days, etc, it will be found that long before the death of the culture the microbe has lost all virulence, although still cultivable. Before this period it is found that the culture presents a series of attenuated virulences. Everything is similar to what happens in respect to the microbe in Chicken Cholera. Besides, each of these conditions of attenuated virulence may be reproduced by culture; in fact, since the charbon does not operate a second time (*ne récidive pas*), each of our attenuated anthracoid microbes constitutes for the superior microbe a vaccine—that is to say, a virus capable of producing a milder disease. Here, then, we have a method of preparing the vaccine of Splenic Fever. You will see presently the practical importance of this result, but what interests us more particularly is to observe that we have here a proof that we are in possession of a general method of preparing virus vaccine based upon the action of the oxygen and the air—that is to say, of a cosmic force existing everywhere on the surface of the globe. I regret to be unable from want of time to show you that all these attenuated forms of virus may very easily, by a physiological artifice, be made to recover their original maximum virulence. The method I have just explained of obtaining the vaccine of Splenic Fever was no sooner made known than it was very extensively employed to prevent the Splenic affection. In France we lose every year by Splenic Fever animals of the value of 20,000,000f. I was asked to give a public demonstration of the results already mentioned. This experiment I may relate in a few words. Fifty sheep were placed at my disposition, of which twenty-five were vaccinated. A fortnight afterwards the fifty sheep were inoculated with the most virulent anthracoid microbe. The twenty-five vaccinated sheep resisted the infection; the twenty-five unvaccinated died of Splenic Fever within fifty hours. Since that time my energies have been taxed to meet the demands of farmers for supplies of this vaccine. In the space of fifteen days we have vaccinated in the departments surrounding Paris more than 20,000 sheep, and a large number of cattle and horses. If

I were not pressed for time I should bring to your notice two other kinds of virus attenuated by similar means. These experiments will be communicated by-and-by to the public."

THE ETIOLOGY OF RABIES.

THE geographical distribution of *Rabies canina* has been held by the author of "Rabies and Hydrophobia," and others, as to a large extent confirmatory of the opinion that this is a purely contagious disease, depending upon a specific virus or germ for its production, and that the malady only appears where these germs are present. Dr. Pélagaud, in a letter to the *Journal de Médecine Vétérinaire et de Zootechnie* for July, affords more recent confirmatory evidence in support of this opinion, from observation and inquiries made in the island of Reunion, in the Indian Ocean. This island is not very widely separated from the island of Mauritius, a British possession, by the sea, and is almost identical with the latter, in so far as geology, climate, flora, and fauna are concerned. In the island of Reunion Rabies is *absobutely unknown*, the oldest medical practitioner had never heard of a case ; while in the Mauritius it appears to be as prevalent as in France. The reason for this, according to Dr. Pélagaud, is not to be found in any difference in the breeds of dogs, for in both islands they are pretty much the same ; but because in Reunion the importation of dogs is rigorously prohibited, while in the Mauritius—subject to England, whose ideas in the matter of importation and exportation are, says the doctor, so different from those of France—the landing European or other dogs is neither interdicted nor controlled in any way. He therefore concludes that in the Mauritius Rabies has no other origin or means of propagation than contagion, and that the notions with regard to its spontaneous development have no foundation. If, he argues, the malady is not spontaneous in the islands of the Indian Ocean, it must be the same all the world over.

LITHOTOMY IN THE DOG.

AN interesting case of Lithotomy in the well-known St. Bernard bitch, "Mab," is recorded by J. Woodroffe Hill, F.R.C.V.S., Wolverhampton, who removed no fewer than 202 calculi from the bladder. These varied in size from that of a millet seed to a potato, the four largest weighing respectively three ounces, two ounces, and half-an-ounce, the whole weighing nine ounces. They were chiefly triangular in shape, and perfectly smooth and white. The operation was performed under chloroform. Mr. Hill writes :—

"I was first consulted about Mab on August 18, 1880, chiefly as to her not breeding, and a continual irritation of the urino-gen. organs. On examination I then discovered she had, in connection with her last pregnancy, sustained a vaginal injury close to the mouth of the uterus, and for which I gave instructions as to treatment. Stone at this time was not suspected. After this I did not see her again until April, when her owner informed me she had visited the dog, and I examined her as to pregnancy. After careful abdominal manipulation, a movable substance was felt, but of its nature there was some doubt. On Saturday morning last, the day of the operation, the patient was again brought to me. She was this time continually straining and passing blood and urine in small quantities. Placing her upon her back, I found the enlargement previously felt had considerably increased in size, and on grasping it crepitus was both felt and heard. As the poor creature was in evident and acute pain, at the wish of the owner, and in accordance with my own feelings about the case, I at once operated, and although it was scarcely

possible a successful issue could result therefrom, yet I felt it was justifiable when such a valuable life was in the balance, as it resolved itself into a question of relief by the only method in surgery possible, or otherwise letting her linger on in agony. Unfortunately the unfavourable prognosis I gave was realised, and poor Mab succumbed on Sunday night, patient and grateful to the last moment, extending herself for fomentation, etc., and licking my hand.

"A *post-mortem* examination revealed another large stone in the left kidney, surrounded by gangrenous structure and pus. This stone was of a ragged nature, and weighed half an ounce; and the kidney, which was only an apology for one, merely forming a thin sac for the stone, weighed barely another half-ounce. The opposite kidney, which had been doing all the work, weighed six ounces. The bladder was considerably hypertrophied, its walls being thickened to the extent of three-quarters of an inch, and cartilaginous. Its neck, in which the stone weighing three ounces had lodged, was enormously distended. Altogether the organ weighed a trifle over eight ounces. The process of healing in those parts cut in the operation, including the bladder, was well established, and had not peritonitis set in the patient would have undoubtedly recovered from it, though her span of life afterwards would have been of brief duration owing to other organic disease."

NORMALLY ABNORMAL MILK.

MEN of science have determined that it is possible to have secretions so far at variance with the natural constituents of a secretion *normal*, that the term *normally abnormal* can be accepted to convey the impression that, although the secretion is abnormal, it is normally so. The object is to impress this on the minds of members of the profession, and to record an instance of recent date, which may be interesting.

Mankind has hitherto been accustomed to repose implicit confidence in the intrinsic and unswerving honesty of the harmless, necessary cow. It seems particularly hard upon trustful natures that their faith in the moral integrity of so mild-eyed a quadruped should be shaken by the unprincipled conduct of a "milky mother" arraigned by Lord Portman before the Dorset county magistrates for wilfully violating the provisions of the Food Adulteration Acts. This unconscionable animal's owner had been prosecuted for selling milk deficient in cream, and convicted for that grave offence. But, conscious of his own innocence, and only too well acquainted with the lawless proclivities of his cow, he appealed against the decision, and invoked the aid of the Inland Revenue Department Laboratory to prove him guiltless. The official analysts, after careful examination of the criminally implicated milk, pronounced that its deficiencies were exclusively attributable to the cow from which it was obtained—a quadruped of so disaffected a disposition that she obstinately refuses to produce milk of the quality enacted by the law. Persuasion and menace have alike been employed to modify her resolve, but in vain. Her milk is officially stated to be "normally abnormal," and it appears that existing statutes, which she boldly defies, have made no provision whereby a contingency of this sort may be met. We presume that it would be useless to urge upon so hardened an offender that she is casting discredit upon her kind, heretofore universally respected, by such reprehensible behaviour. Probably swift and final retribution at the point of the butcher's knife will befall a delinquent who, not content with breaking the law and getting her proprietor into trouble, malignantly persists in setting an evil example to all other cows.

From the evidence there does not appear to have been any examination

of the "milk factor" or "machine"—the dairy cow—yielding such a sad supply of lacteal fluid; therefore the evidence appears deficient—*ergo*, the cow might have been in an abnormal condition, and this being so, she could not by any possibility yield milk normally abnormal. An examination by a qualified veterinary surgeon might have thrown light on the subject, proving the milk glands to be out of health, or the *prima viæ*.

In the examination of milk there is no man better qualified than the veterinarian who has made cattle pathology his study. Not only can he test the purity of the milk, by those deviations in the secretion as the period after calving goes on, and from his aptitude diagnose the idiosyncrasy of an animal, and by judicious treatment convert a bad yield to a somewhat normal state, as cows are fed with uniformity; but he also knows that the secretions differ until, by mixing the whole, like the fed, uniformity in milk is obtained, and not unfrequently unhealthy milk mixed with sound to the damage of the whole.

A system of veterinary inspection of dairy cows would be of advantage to the owners, made at frequent intervals at the time of milking. The trouble and expense is not great—the value of the inspection an assurance to the consumer that the milk is from sound animals, and that every care is taken.

As an instance, the Warwick Farm dairies, numbering several hundred cows, are at frequent intervals closely inspected by Mr. R. Ward, F.R.C.V.S., of Paddington, and any cow the least amiss removed, the condition reported to the proprietor, and sanitary laws strictly enforced. This innovation should recommend itself to other large dairies, for in most parts of the country there are located members of the profession who have made cattle their study. The security the consumers feel under such a system is of some importance, and fairly recompense the proprietor and the veterinary surgeon.

Now that the milk-pail has been proved to hold germs of disease, too much care cannot be exercised.

REPORT ON VETERINARY SCIENCE AND PRACTICE IN AUSTRALIA.

THE following report, forwarded too late to be read at the Congress, has been sent for publication in the Journal :—

To the Secretary of the British National Veterinary Congress.

SIR,—In accordance with your communication dated 24th November, 1880, requesting us to inquire into and report upon the state of veterinary practice and science in these colonies, we beg to forward you the following condensed report compiled from those of the secretaries, together with a number of suggestions for the general advancement of the profession.

It is our first duty to state that the steps now being taken in the mother country to secure the legal protection of the profession have met with the unanimous approval of veterinary surgeons in these colonies, and that although the passing of the "Veterinary Surgeons' Bill" will not directly affect us, it may be the means of similar protective measures being adopted here, for hitherto all attempts to obtain protection have failed, in consequence of there being none in England. The veterinary profession has never been fully appreciated in the Australian colonies for the following reasons, viz. :—

I. A large proportion of the stock-owners and farmers have had no previous experience of the management of stock in countries or parts where veterinary surgeons were available, consequently they have but a very imperfect

knowledge of the utility of the profession, and those who have endeavoured to obtain the services of veterinary surgeons have been so frequently imposed upon by men practising under assumed titles that they have been led to form very unjust opinions of it.

II. The colonial Governments being chiefly composed of a similar class of men has led to the employment of laymen and medical men in what are the legitimate duties of the veterinary surgeon only. At the present time there is not a single veterinary surgeon in the Australian colonies wholly employed in Government service. All stock inspection is done by lay inspectors, except in doubtful cases where there is great difficulty and a heavy responsibility. Then the veterinary surgeon is called in. It should also be stated that whenever a commission has been appointed to deal with outbreaks of disease in stock, etc., medical men and lay inspectors have been employed, and veterinary surgeons systematically excluded. This, we are sure, did not arise from lack of veterinary surgeons to undertake these duties, for able and worthy men have always been available ; but seems to have arisen from an inability of those in power to discriminate between the legitimate duties of veterinary surgeons and those of medical men and lay stock-inspectors. The attached reports will show the correctness of these statements, and that enormous sums of money have been uselessly expended, whilst fatal maladies have continued to spread and cause heavy losses.

III. This want of recognition on the part of colonial Governments and the leading stock-owners has exerted a very depressing influence on the social status of the profession, and has led to many good men leaving its ranks for more lucrative and less harassing occupations, and the field has been thus left open to quackery, which prevails to a greater extent in this than perhaps any other country. The assumed title of veterinary surgeon and the term veterinary are so frequently associated with such occupations as horse-breaking, shoeing, and the vending of quack nostrums that there is little wonder that the public look with suspicion on veterinary surgeons.

The present state of veterinary progress in these colonies is therefore similar to what it was in England fifty years ago, but it is not the intention of colonial veterinary surgeons to allow it to remain so. Having observed the beneficial effects of the united action of members of the profession in home countries, the veterinary surgeons of Australia about twelve months ago formed themselves into an association called the "Australasian Veterinary Medical Association," which is now fully established, and has branches in all the Australian colonies. Although so recently formed, it has already done much good, and bids fair to become an important factor in raising the profession in public estimation.

Through the efforts of the association a Parliamentary Committee was recently appointed in Victoria to inquire into the Diseases in Stock Act (see report attached), with a view of adopting improved legislation ; while another important object gained by its influence was to get the names of all unqualified men struck off the list of veterinary surgeons in the Melbourne Directory. The secretary is at present engaged in obtaining a list of all veterinary surgeons residing in the Australian colonies, and it is the intention of the association shortly to publish its transactions periodically.

With regard to the subjects to be dealt with by your Congress, viz., the Suppression of Empiricism, the Law of Soundness, etc., etc., we beg to offer the following suggestions :—

Suppression of Empiricism.

In order to effectually suppress empiricism we deem it advisable that the term "veterinary," in whatever form used, should be prohibited to all except qualified veterinary surgeons as a title. Once deprive empirics of their

assumed titles, we feel convinced that they would be very seldom employed in this country, and whenever, through force of circumstances, their services were sought, it would be known that they were not veterinary surgeons, and no discredit would be thrown upon the profession.

Veterinary Titles.

We would point out the desirability of distinctive titles of qualification being conferred on distinguished veterinary practitioners, as in the medical profession; for at present no inducements are held out to those who are capable and desirous of distinguishing themselves either in medical or surgical knowledge. If a veterinary surgeon has a special taste for veterinary medical science in preference to surgery, he would be likely to excel in that branch, therefore he should be enabled to acquire a title by which the public would recognise his specialty, as in the case of the human physician. Such titles as Doctor of Veterinary Medicine and Doctor of Veterinary Surgery would be sufficiently distinctive, and answer the purpose. This, we think, is quite as necessary in veterinary as in medical practice, for veterinary science has a much wider field for labour, embracing as it does such a variety of species, and that it would be highly conducive to the advancement of every branch of medical and surgical knowledge, and to the general benefit of mankind and animals. The Fellowship Degree does not meet this requirement.

Nomenclature of Diseases.

This subject requires attention, for until more rational and scientific names are given to animal diseases, there is bound to be endless confusion. We would suggest that a number of influential scientific gentlemen be appointed by the Congress to revise the nomenclature of diseases, so that each disease shall have a name by which it is generally known, instead of having so many and often absurd names.

Professional Etiquette.

Under this head we would suggest the advisability of a code of rules being drawn up by the Council of the Royal College of Veterinary Surgeons, setting forth the prominent points of professional etiquette for the guidance of members, embracing such subjects as consultation fees, etc. Each student on receiving his diploma should be supplied with a copy, and sign a declaration that he will follow them throughout his professional career, and any member known deliberately to break them to render himself liable to have his name struck off the register of the college.

Veterinary Associations.

We beg to submit that a list of all veterinary medical associations in the British dominions should be attached to the college register, with a copy of the rules of each association, and a list of its members, and that each association be empowered to appoint a board of inquiry to inquire into the conduct of any defaulting member of the profession residing in the district, whether he be a member of the association or not, and a report of the evidence to be sent to the Council of the Royal College of Veterinary Surgeons to be dealt with. We are of opinion that if some such scheme as this were adopted, it would do more to raise the status of the profession than anything else. Other matters of professional interest could be dealt with in a similar manner, and we would further suggest that each association should keep a statistical record of all breeds or strains of stock known to have hereditary taints. This information would be invaluable for reference, and would be easily collected if each member would make observations and take notes.

The Law of Soundness.

It is desirable that there should be some authentic classification of all the hereditary diseases of animals which render them unfit for breeding purposes, for many animals that are not suffering from disease themselves may yet transmit disease to their offspring, and should be considered unsound. For example, many animals exhibited at our agricultural shows, although known to possess some hereditary taints, are awarded prizes, and thus encouraged to spread disease wherever they go, and unless the animal is suffering from actual disease at the time a veterinary surgeon cannot condemn it. A classification of hereditary diseases, together with statistical and other records kept by the veterinary medical association for each district, would enable the profession to give more certain and reliable information in all these cases, and at the same time would tend to improve the different breeds of stock, and prevent a great deal of imposition and wrong.

In drawing up this report we have only briefly touched upon the subjects which we desire to bring before your Congress, but trust it will be sufficient to show that the profession in these colonies are fully alive to the necessity and importance of many radical changes being made in the internal organisation of the profession, and that it is only by the united action of members of the profession, and steady perseverance, that these objects can be attained. We therefore look forward with hope and confidence to the meetings of the British National Veterinary Congress, and trust that it may be the means of bringing about some of the changes necessary to the welfare and advancement of the profession. In conclusion, we would state that we have much pleasure in observing that the Veterinary Medical Bill is at last in a fair way for becoming law. Mr. Richard Rutherford, M.R.C.V.S., Edinburgh, has been requested to represent us at your Congress, as his residence for some time in Australia eminently fits him for the undertaking, and his personal experience will enable him to enlarge on some of the subjects touched upon.

We have the honour to be, sir, your most obedient servants,

GRAHAM MITCHELL, F.R.C.V.S., Gen. Sec. for Australia.
W. T. KENDALL, M.R.C.V.S., Victoria, Hon. Sec. A.V.M.A.
J. STEWART, M.L.C., M.R.C.V.S., New South Wales.
T. CHALWIN, M.R.C.V.S., South Australia.
J. IRVING, M.R.C.V.S., Queensland.
A. PARK, M.R.C.V.S., Tasmania.
C. A. CALVERT, M.R.C.V.S., New Zealand.

} *Secretaries.*

BRITISH NATIONAL VETERINARY CONGRESS.

HAVING already informed our readers of the brilliant success of the Congress sittings, as held in the Society of Arts' room on 20th and 21st July, we will now enter into more detail regarding the work done and the methods of procedure at this important professional gathering. We are informed that a report *in extenso* will be issued under the form of a volume of Congress "Proceedings" as soon as possible, and therefore feel it less urgent on us to do more than make the profession aware of the results. The Secretary reports as follows :—

The attendance was above what even the most zealous promoters were led to expect, and included representatives of the medical profession, of the army, of the agricultural societies, of the public and professional press, of the Royal Society for Preventing Cruelty to Animals, and so on ; and the profession from all parts of the empire was represented, either by gentlemen attending or by letter in support of the movement; also professors of the veterinary and

agricultural schools, army veterinary officers, Government veterinary inspectors, and town and country practitioners were present and actively assisted in the proceedings. The majority of the veterinary associations were represented by their officers, and the Royal College of Veterinary Surgeons by its President, members of Council, and Secretary. The arrangements made for the convenience of the Congress during its sittings included the use of the commodious and comfortable lecture theatre of the Society of Arts, the attendance of various instrument makers and druggists, with an exhibition of their most modern appliances, instruments, and preparations, and facilities for luncheon, etc. One of the most noteworthy features of the Congress was the attendance of members from such different regions of the country—Ireland, Wales, Cornwall, and other distant parts of the United Kingdom being very well represented ; while delegates from the colonial schools now for the first time in the history of the profession of Great Britain took part in the deliberations of a veterinary meeting in Great Britain. Letters of congratulation and support were received from distinguished continental and other veterinary surgeons, including Franck, Müller, Wirtz, and Liautard ; also a number of the honorary constituents, unable to attend, expressed their hearty accordance with the objects of the Congress, notably the distinguished Regius Professor of Medicine of Oxford University, and the no less renowned Curator of the Royal College of Surgeons, gave the meeting cordial support.

Professor Walters, of the Army Veterinary School at Aldershot, having been called to the chair at 10 a.m. of the 20th July, declared the Congress opened, and proposed that the President of the Royal College of Veterinary Surgeons should occupy the chair as President. This having been received with acclamation, Mr. George Fleming, F.R.C.V.S., F.R.G.S., etc., etc., took the seat vacated by Prof. Walters, and the proceedings continued.

The officers of the Congress were then elected.

The Organising Secretary, Mr. J. H. Steel, A.V.D., then read his "Report of the Origin and Progress of the Congress," fully explaining the manner in which it had gradually developed in spite of some difficulties and much consequent labour. This report having been received and adopted by the meeting, the President delivered a masterly address introductory to the Congress proceedings. In the course of this he showed how, exactly 120 years ago, the science of veterinary medicine was born ; he traced its development in France and its extension to neighbouring countries, and at length to Great Britain. He then alluded to the most prominent features of veterinary progress in this country, culminating in the present action to obtain the passage through Parliament of the "Veterinary Surgeons' Bill." Passing to the major subjects to be brought before the Congress, he dealt with them *seriatim*, and finished his oration with wishes for the success of the Congress, since, "just as the profession shows itself ready and willing to put itself forward in the public interest, so will the public acknowledge your interests as scientific men, and as being willing to increase the public wealth and protect the public health to the best of your ability."

This oration was received with a considerable amount of applause.

Mr. J. J. Meyrick, Inspecting Veterinary Surgeon, A.V.D., then read his paper, "On Soundness of Horses : Suggestions as a Basis for Discussion on the Subject," in which he treated of several of the minor points of soundness—Splents, Bone Spavin, Bog Spavin, small hoofs, slight cases of fractured point of the hip, and slight melanotic tumours. He concluded with a suggestion "that the present Congress elect a committee to report upon the subject of soundness and unsoundness of horses." The discussion was postponed until the afternoon sitting.

The following instruments and appliances were then exhibited and explained, and their value discussed :—

By Captain Russell, of Grantham—his new suture apparatus ; by Baron Smissen de Cortenberg—his check-bit for runaway horses ; by Professor Robertson—his modification of the ecraseur, also the nasal insufflator ; by the President—an aspirator adapted for veterinary purposes.

The Secretary then distributed copies of the papers to be read at the sittings, and made certain announcements concerning the details of Congress business, and the sitting terminated.

(*To be continued.*)

GENERAL SIR F. FITZWYGRAM'S VETERINARY PRIZES, 1882.

THE next examination for the veterinary prizes given by Sir F. Fitzwygram will take place in London, at the R.C.V.S., 10, Red Lion Square, and in Edinburgh (by the kind consent of the Directors) at the chambers of the Highland and Agricultural Society, George IV. Bridge, at 10 a.m. on second Wednesday in May, 1882.

These prizes are open to members of the R.C.V.S., who have obtained their diploma since the last examination, and who have passed with "Great" or "Very Great Credit." The examination will be both written and practical. Marks will be assigned to written answers as under :—Physiology, 300 ; pathology, 300 ; anatomy, 300. Three hours will be allowed for each of the above subjects. Sixty per cent. of marks must be obtained in each subject. Materia medica, 150 ; botany, 150 ; chemistry 150. Two hours will be allowed for each subject. Forty per cent. of marks must be obtained in each of these latter subjects.

The five best candidates, having qualified as above, will be allowed to proceed to the practical examination.

Six hundred marks will be assigned to horse practice, and 600 marks to cattle. Two hours will be allowed for the examination of each candidate in horse, and two hours for examination in cattle practice. A candidate failing to obtain sixty per cent. marks in horse practice, or forty per cent. in cattle practice will be disqualified.

The practical examination will be held at such place, and at such time as may suit the examiners and the majority of the candidates. The prizes are—1st, £50 ; 2nd, £30 ; 3rd, £20. Actual travelling and hotel expenses, notexceeding £5, will be allowed to each of the five selected candidates. The names of the intending competitors must be sent to the Secretary, R.C.V.S., four days before the date of the examination.

Further information can be obtained from the Secretary, R.C.V.S., 10, Red Lion Square, W.C.

Aldershot, *August 9th*, 1881.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

AT the several meetings of the Scottish Section of the Court of Examiners, held in Edinburgh and Glasgow on the 13th and 14th of July, the following students passed their Final Examination, and became members of the profession :—

John Rogerson.	J. G. O'Donel.	*W. J. Roberts.
W. H. Jones.	M. Y. Lees.	W. G. B. Dickinson.
*P. Dundon.	J. Taylor.	J. J. Mullally.
	W. D. Hunter.	J. Wright.

The following students passed their Second Examination at the meetings of the Scottish Section of the Court of Examiners, held in Edinburgh and Glasgow on the 11th, 12th, and 13th July :—

*B. D. Pierce.
*W. Welsby.
M. P. Walsh.
J. Anderson.
J. A. Braddell.
J. Pow.
R. Grossart.
J. E. Tudor.
T. F. Coleman.
J. McLaren.
J. N. Barber.
W. M. Lyon.
G. C. O. Fowler.
E. L. Ackroyd.
J. M. Magill.
C. S. Barnes.
*G. Hutchinson.
E. H. Hallam.
D. O'Leary.
*J. F. Hayes.
P. D. O'Connor.
G. A. Herron.

The following passed their First Examination at the meetings of the Court of Examiners, held in Edinburgh and Glasgow on the 15th, 16th, 18th, and 19th July :—

A. Waugh.
T. Barker.
*R. Miller.
C. T. Laing.
M. A. Brown.
J. Hackett.
R. J. Urquhart.
*H. A. Fulham.
H. M. Maxwell.
W. F. Anderson.
W. Franklin.
D. Leonard.
W. Jeeves.
H. L. Ferguson.
D. J. Barry.
T. Bell.
C. S. Pinart.
B. D. Pierce.
T. H. Rockfort.
F. W. Kendall.
R. E. White.
*R. J. Hicks.
J. Philip.
A. E. Hanson.
*M. H. Hayes.
*B. A. Claney.
A. B. Forsyth.
R. Bolster.
*A. Macormick.
D. J. O'Sullivan.
T. Platt.
W. Kirk.
J. W. Bennett.
A. E. Darwell.
J. A. Meredith.
D. Hamilton.
*W. R. Davis.
T. A. Porteous.
H. Young.
J. Young.
J. Hanbury.
C. Gruty.
F. A. Cuthbert.
*J. Faulkner.
J. S. Dodgson.
P. J. Culhane.
W. Scott.
T. W. Carnachan.
T. Marriott.
A. Reid.
R. McNair.
R. E. Weir.
M. B. Scouler.
J. Holland.
G. McGregor.
J. M. Johnson.
T. F. Craig.
J. Laithwood.
W. Frazer.
H. Tweedley.
J. Spalding.
J. J. Ross.
J. Larkin.

N.B.—* Marked thus passed with "Great Credit."

THE NEW VETERINARY COLLEGE, EDINBURGH.

AT the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh on the 13th July, the following students were admitted members of the profession.

Mr. W. G. B. Dickinson	Boston.
„ W. J. Roberts*	Oswestry.
„ J. J. Mullally	Tipperary.

The following passed their Second Examination at the meeting of the Court, held on the 11th July.

Mr. Barnes.*
„ Hutchinson.*
„ McLaren.
„ M. Lyon.
„ G. Fowler.
Mr. O'Leary.
„ Barber.
„ Hallam.
„ Ackroyd.

The following passed their First Examination at the meetings of the Court, held on the 16th and 19th July.

Mr. Hickes.*	Mr. J. Young.
Capt. M. H. Hayes.*	„ Dodgson.
Mr. Clancy.*	„ W. Scott.
„ Philip.	„ F. Cuthbert.
„ Kendall.	„ Bolster.
„ Hanson.	„ McCarmack.*
„ White.	„ O'Sullivan.
„ Forsyth.	„ Platts.
„ Faulkner.*	„ Bennett.
„ Gresty.	„ Darwell.
„ Bell.	„ Meredith.
„ Culhane.	„ Hamilton.
„ Hanbury.	„ Davis.*
„ H. Young.	„ Porteous.

* Marked thus passed with Great Credit.

The medals granted by the Highland and Agricultural Society of Scotland, Mr. Falconer King, and the certificates of merit granted by the Principal, were awarded as follows :—

Chemistry.—Silver Medal—Mr. Colin Gresty. Mr. Falconer King's Silver Medal—Mr. W. R. Davis.

Botany.—Silver Medals—Messrs. Davis and Gresty (equal). Certificate of merit—Mr. S. A. Porteous.

Materia Medica.—Silver Medal—Mr. Davis. Certificate of merit—Messrs. R. J. Hickes, and C. Gresty.

Dr. J. Hamilton, M.B., F.R.S.E., L.R.C.P.E., Pathologist to the Edinburgh Royal Infirmary, has been appointed Professor of Practical Pathology and Morbid Anatomy.

Mr. James Hunter, F.R.C.S.E., L.R.C.P.E., Lecturer on Physiology, Edinburgh Medical School, has been appointed Professor of Physiology and Practical Histology, in the place of Dr. Young, resigned.

Army Veterinary Department.

Gazette, July 26th.

VETERINARY DEPARTMENT.—Veterinary Surgeon, First Class, J. J. Meyrick to be Inspecting Veterinary Surgeon, vice A. J. Owles, retired. The undermentioned gentlemen to be Veterinary Surgeons, on probation : J. R. Beech, R. W. Burke, J. H. Riches.

Gazette, August 23rd.

VETERINARY DEPARTMENT.—The promotion of Veterinary Surgeon, First Class, J. J. Meyrick, to the rank of Inspecting Veterinary Surgeon is postdated to June 29, 1881. Veterinary Surgeon on probation A. Baird to be Veterinary Surgeon. The undermentioned Veterinary Surgeons to be Veterinary Surgeons, First Class :—W. Walker, M. F. M. Case, S. Knott, W. D. Sartin, S. R. Sartin, R. Rowe.

Obituary.

THE death is reported of Thomas Avis, M.R.C.V.S., hospital surgeon at the Royal Veterinary College, London. Mr. Avis graduated so recently as 1877, and gave promise of being an excellent member of the profession His death is a subject for deep regret.

Parliamentary Intelligence.

House of Commons, July 28th.

THE VETERINARY SURGEONS' BILL.—Sir EDWARD WATKIN : On motion for going into Committee on Veterinary Surgeons' Bill, to move, "That this House will, upon this day three months, resolve itself into the said Committee."

Mr. WARTON: On motion for going into Committee on Veterinary Surgeons' Bill, to move, "That this House will, upon this day three months, resolve itself into the said Committee."

Mr. JOSEPH COWEN: On motion for going into Committee on Veterinary Surgeons' Bill, to move, "That this House will, upon this day three months, resolve itself into the said Committee."

Mr. T. P. O'CONNOR gave notice that in Committee on this Bill he would move to add to clause 4 the following proviso :— "A person designated a Licentiate of the Royal College of Veterinary Surgeons shall be furnished by the Council of the said College with a form of certificate bearing the arms of the said College, stating that such a person is registered a 'Licentiate of the Royal College of Surgeons, to practise the Art and Science of Veterinary Medicine and Surgery,' and signed by the President, Treasurer, and Secretary of the Council of said College."

Mr. J. N. NICHOLSON: On motion for going into Committee on Veterinary Surgeons' Bill, to move, "That this House will, upon this day three months, resolve itself into the said Committee."

IN COMMITTEE ON VETERINARY SURGEONS' BILL.—Mr. WHITLEY : Page , leave out clause 15.

House of Commons, August 3rd.

THE SIBERIAN PLAGUE.—Mr. BIRKBECK asked the Vice-President of the Council whether his attention had been called to the report of Mr. Shear, relative to the Siberian Plague, and the extreme danger of its spreading to our flocks, and also the danger of fatality to the wool-sorters ; whether it was a fact that upwards of 100,000 bales of Eastern wool were annually imported into England, and proved to be capable of much danger ; and whether he had considered, in view of its dangerous properties, the desirability of prohibiting the sale of the sweepings from the manufacturers' sorting-rooms, and also the sale of the old bags.

Mr. MUNDELLA : Mr. Shear's report has been considered by the Veterinary Department, and Professor Brown has written a memorandum on the subject, which I propose to lay upon the table. Outbreaks of "Anthrax" are not uncommon in Russia, and have occurred occasionally in this country, although the disease has not generally extended beyond the farm where the outbreak took place. There is only a single instance recorded where the disease arose on lands which had been partly manured with refuse from woollen factories. Under these circumstances there does not appear to be any necessity for the prohibition suggested by the hon. member.

House of Commons, August 12th.

VETERINARY SURGEONS' BILL.—AMENDMENTS.—Mr. NEWDEGATE : Clause 4, after "examination," insert, "in England of the students attending the Royal Veterinary College." After clause 19, insert the following clause (saving rights of the Royal Veterinary College). "Nothing in this Act shall affect the Charter and supplemental Charter granted by Her Majesty to the Royal Veterinary College in the years 1875 and 1877 respectively, or of any of the property, rights, powers, and privileges of that College thereunder."

Mr. MUNDELLA : Clause 10, after "death," omit present words, and insert, "and on the receipt of such certificate the registrar shall erase the name of

such person from the register of veterinary surgeons, and shall transmit to the said registrar of deaths the cost of such certificate and transmission."

Mr. CHARLES JAMES: Clause 19, at end add, "Provided, that the fees chargeable under this section shall not exceed the registration fees of the Royal College of Veterinary Surgeons.'

House of Commons, August 15th.

THE VETERINARY DEPARTMENT OF THE ARMY.—Mr. GRAY asked the Secretary of State for War what was the rule regulating the promotion of officers in the Veterinary Department of the Army, and whether promotion was habitually given according to seniority, or otherwise.

Mr. CHILDERS said: The regulation governing the promotion of veterinary surgeons is in these words, "Promotion shall be solely by selection, on the ground of ability and merit, due consideration being given, however, to length of efficient service." In the case of equal merit, preference is given to length of service.

House of Commons, August 16th.

VETERINARY SURGEONS' BILL.—Mr. BIDDELL: On motion for going into Committee on Veterinary Surgeons' Bill, to move, "That this House will, upon this day three months, resolve itself into the said Committee."

House of Commons, August 20th.

THE VETERINARY SURGEONS' BILL passed through Committee after several amendments had been made.

House of Commons, August 22nd.

THE VETERINARY SURGEONS' BILL passed the third reading.

House of Lords, August 24th.

VETERINARY SURGEONS' BILL.—The Commons Amendments to this Bill were considered and agreed to.

(These amendments in no way interfere with the Bill, which has not been altered since it entered the Commons, and all the opposition to it—at one time most formidable—was removed before it went into Committee. It is now an Act in force.)

Jurisprudence.

IMPORTANT HORSE-WARRANTY CASE AT PENZANCE.

AT the Penzance County Court on July 13th, before Mr. Montague Bere, Q.C., judge, an action was tried in which William Mann, of St. Buryan, sought to recover £50 from John Stephens, veterinary surgeon, of Penzance, for a wrongful warranty of a horse. Mr. Wellington Dale was for the plaintiff, and Mr. Bridgman, of Plymouth, for the defendant.—The plaintiff's case was that in March last, being about to purchase an entire horse, he asked the defendant to examine the animal with a view to giving a certificate as to its condition. It was accordingly examined on the 19th of March, but as it was then "roaring" and suffering from an unsound hock, the defendant declined to pass it, and arranged to see it again at a subsequent date. The plaintiff particularly asked him to be very careful about the matter, as he was giving a big price for the horse, and told him that unless he could give a satisfactory certificate at the next examination he must give up all idea of

making the purchase as it would be too late for the season. A day was fixed for the next examination, but the defendant did not attend at the appointed time. On the following day, however, he told the plaintiff that he had seen the horse during the night, had found it perfectly sound in every respect, and that Mr. Mann would have a good bargain in getting it for £80. At the same time he gave a certificate that "the horse was well made and a thoroughly sound one in wind and limbs and all other respects." On the faith of this certificate the purchase was made, but on the same evening the plaintiff found that the horse was a roarer and was still bad in the wind as on the 19th of March.—His Honour: But roaring does not affect the wind. He must have been galloping very hard for the plaintiff to have found that out on the same evening.—Mr. Dale went on to say that there was something also wrong with the hock, and Mr. Mann noticing the same defects on the following day, called Mr. Stephens's attention to it, and the latter told him to exercise the horse gently. This was done, but it did not get any better, and when Mr. Stephens saw it again he himself pronounced it to be a roarer. On the 18th of April it was examined by Mr. Olver, veterinary surgeon, who certified, "I find he is a roarer, and does not flex his hocks properly, consequently unsound." Mr. Olver would also state that he never saw a worse roarer in his life, and that the horse must have been a roarer when examined by Mr. Stephens on the 31st of March.

His Honour: You must prove to me that there was such gross negligence on Mr. Stephens's part that any man holding himself out as an instructed and educated veterinary surgeon ought to have seen it and discovered it. But the mere fact that roaring existed on a particular day, was certified not to have existed on another day, and then seems to have been reproduced, would not make me come to that conclusion.

Mr. Dale: But he undertakes to exercise a reasonable degree of skill and care.

His Honour: But you must show there was such negligence that no properly educated veterinary surgeon ought to have overlooked the unsoundness.

Mr. Dale said the question would arise as to what was a reasonable degree of skill and care. He was in a position to prove that the mother of this horse was a roarer.

His Honour: That is no use. What on earth is the use of proving that? You must prove that on the 19th of March the horse was a roarer. Mr. Stephens examined him on the 31st March, and said he was not a roarer at that time, and you will have to show that on that day the disease was so apparent as to have made it necessary for an ordinarily capable veterinary surgeon to have discovered it.

Mr. Dale said he should prove that it was apparent to the inexperienced eye of the plaintiff when the horse came into his possession, and in that case it ought to have been apparent to the defendant.

His Honour pointed out that roaring did not necessarily prove unsoundness. It had been well laid down by Lord Ellenborough that if roaring were the cause of such disease, the existence of which would practically diminish the usefulness of the horse, then that roaring caused unsoundness. But unless that could be proved roaring was not unsoundness. In the case of Basset and Collins, decided in 1810, Lord Ellenborough said, "It has been held that roaring is not necessarily unsoundness, and I entirely concur in that opinion. To prove a breach of warranty the plaintiff must show not only the existence of roaring, but that the roaring is symptomatic of disease."

Mr. Thomas Olver, veterinary surgeon, was then called. He said he saw the horse on the 18th of April. He found that he had a peculiarly stiff action

in moving his hocks. He made a threat to strike him with his stick, when the horse grunted, and he at once came to the conclusion that he was a roarer. He then had him out in the field and galloped him, and this confirmed him in his opinion.—By his Honour : I cannot tell how long the disease had existed that caused the roaring. Roaring is not necessarily a thickening of the top of the windpipe. There are various causes that produce it.—His Honour : Are you of opinion that roaring is transmitted from sire or dam to colt or filly? A. I have not the slightest doubt about it ; I can prove it.—His Honour : There are people who have doubts.—Mr. Olver : I believe very few educated men in our profession have the slightest doubt about it.—His Honour : Are all Prince Charlie's colts roarers?—Mr. Olver : No, not all of them, but many of them are.—His Honour : Then you do not say it is necessarily hereditary.—Witness : Oh, no. No disease is necessarily hereditary, but it is undoubtedly hereditary all the same.—By Mr. Dale : The horse roared very badly on the 18th of April, but I do not say it must necessarily have been a roarer on the 31st of March. The defect in the hock might probably pass off again, but I consider any defect of that kind is unsoundness.

His Honour : Do you go so far as to say that a defect not likely to injure the horse permanently is unsoundness?—Yes ; it is unsoundness while it exists. A horse may be lame to-day and sound to-morrow, but I should not like to pass it as sound if it were lame to-day.

Mr. Bridgman : Would you be surprised to know that three veterinary surgeons have seen the horse this morning, and are prepared to certify that it is perfectly sound in limb? No ; I should not be at all surprised. I will not swear the horse was necessarily unsound on the 30th of March, although it was so when I saw it on the 18th of April. Roaring may be temporary, but in this case I believe it will be permanent.

His Honour here said he did not wish to stop the case, and at his suggestion the defendant was called before any further evidence was taken on the other side.—Mr. Stephens stated that he examined the horse on the 18th of March, and had it galloped, but it was breathing too quickly, and he declined to pass it on that occasion. It was coughing, but there was nothing to indicate that it was a roarer. On the 30th of March he saw it, and again examined and tested it very carefully, adopting all the usual methods. He adopted more than the usual precautions because of the condition of the horse on the first occasion of his seeing it. He came to the conclusion that the horse was perfectly sound in wind and limb, and he would swear that it was so on his second examination. There were numbers of cases on record in which horses had suddenly become roarers, and he discovered this one to be a roarer on the 14th of April. He said unhesitatingly that it became a roarer between the 30th of March and the 14th of April.

His Honour then said he had Mr. Stephens examined in order that the view he had taken early in the case might be confirmed. For the plaintiff to support this action he must prove that the defendant acted as no intelligent and properly educated veterinary surgeon would have done when he examined the horse on the 30th of March, and that he did not exercise a reasonable amount of skill and intelligence. But at the end of Mr. Olver's evidence he came to the conclusion that there was little if any evidence against Mr. Stephens at all. Mr. Stephens had now given his own account of the transaction, and he had given his evidence very clearly and straightforwardly. It was evidence in which implicit confidence could be placed, and being of opinion that the plaintiff had failed to make out his case, he gave a verdict of non-suit.

Correspondence, etc.

A RETROSPECT OF THE BRITISH NATIONAL VETERINARY CONGRESS OF 1881.

SIR,—The assembling of all learned societies in congress has now become general in Great Britain, the initiative being obtained by precept from continental Societies.

The advantages derivable from the assemblies have been made so manifest that, like a rage, the congresses of 1881 will be historically recorded as the year of congressional mania.

That the veterinary profession has not been permitted to stand aloof, as the only liberal science indifferent to the movement, we have every reason to congratulate ourselves, thanks to the fagging of two of our earnest young members of the profession—Messrs. Steel and Banham, to whose activity and determination the success of the congress is mainly due.

The profession, from its proverbial apathy—which, like a chronic disease, seems adherent—will not stir itself, and it is only when such excellent jockeys as Steel and Banham mount the "body corporate," and by expenditure of much pen, ink, and paper, they manage, with "*Archerlike skill*," to ride the profession to the front.

When the profession arrives at the front, what a *formidable* front she presents (may I be pardoned for qualifying "front" with an adjective, should any one object to it)! These Congress meetings will have one advantage—they will expose the lethargic, apathetic, dormant, stagnant, or retrograde limbs of the body corporate, and either rouse them to energy and emulation, or to stand aside, no longer an *impedimenta* to professional progress.

The absence of the principals of our various teaching schools, and several professors, was much commented upon, not alone by those in the profession, but outside of it; Professors Robertson and Axe, of the London school, being alone; the former contributing an excellent paper on the "Influence of Disease in Animals on Man," and the latter entering with much earnest sagacity into the discussion on unsoundness in horses brought about by Mr. Meyrick's paper. Now I take it that both these gentlemen displayed tangible evidence of their devotion, not only to the profession and its advance, but to the members who had come long distances by sea and land to attend the Congress. These must have returned home with happy reminiscences of the meeting, and these two professors in particular.

The heavy work of large practices, and the concomitant responsibilities, must really be accepted as the excuse for the absence of our flourishing London practitioners, Mr. Batt, sen., and Mr. J. R. Cox being the only two I noticed who sat out the meeting. I may be wrong, and hope I am in this statement: others may have popped in, peeped, and popped out again unnoticed.

The attention and punctuality of the rural practitioners was noticed by all, and many of these have practices with duties of the highest importance, and for the nonce entrusted to the son or assistant: they came to feed on the ideas and aspirations of others, and add their *quota* in return.

Reunion—a state of things much to be desired with us, important to all societies if they are to flourish—may be developed by these Congress meetings, although the news enubilated by the President (Mr. Fleming) concerning the "blocking" of the Veterinary Bill in Parliament, through the influence of a few members of the profession—one or two of whom, I am told, being members of Council, but I trust I am misinformed for the Council's sake, the integrity of which should, and must be, above suspicion.

The members of Congress, to a man *almost*, held that the Bill should be pushed on this present session ; and on reflection I must say I feel its importance, now the fact has been patented that we have not the exclusive right to the title of veterinary surgeon.

Naturally it will follow that as soon as the quacks find the Bill is thrown out, they will infer that a year or two must elapse ere another Bill can be introduced, and the present legion of them will be considerably reinforced by the advent of another Bill ; and our indomitably persevering President will regret he ever attempted to assist the profession out of its "quagmire of quackery," and in all probability throw up the Bill altogether, which, after the recent *exposé*, no one will touch.

Imagine our own enemies only to be our own selves!! I hardly question that the Commissioners in Lunacy would doubt our sanity as a competent corporate body, to mind our own affairs and interests, after the remarks from the presidential chair at Congress.

The reflections cast on the profession must not be pleasing if we are thus divided, and now that the period of revolution in all liberal sciences has arrived, our profession must receive the *shock* with the rest ; if she is true to herself we shall stand, if not, great will be the fall. Our position as scientific, educated men must be taken, and the time is *now*. Quacks are to be registered as practitioners ; the gulf between the qualified and unqualified made very narrow—indeed, almost obliterated in a legal sense; so that we must move ourselves to attain our former position.

It has over and over again been remarked that the union of the educated veterinarian with medical practitioners is most desirable, not for either profession in particular, but for the general welfare and culture of both. To bring about this union, the institution of a Congress at short intervals is most likely to prove the means to the end.

Subjects well worked out and afterwards discussed must tend to place those members of the profession able to grasp a subject in the position due to them, and thus the unqualified man will be farther off than ever, although registered.

I truly think the association of the farrier's shop, smithy, and drug store, in a kind of *multum in parvo* style, by members of the R.C.V.S., has much to do with associating the profession with quackery ; for it displays a rule-of-thumb, rough-and-tumble kind of practice to the intelligent looker-on. The unqualified has his forge to get the foot, then having the foot, he has a good chance of getting the bodily ailments to treat. Our qualified man does the same, with the same object in view. It is in Great Britain only that the association of a blacksmith's trade is tolerated ; on the Continent it is *infra dig*. So long as it continues in this country, the veterinary surgeon will retain his mediocral position, and in but rare instances rise out of it, and then only when dubbed "professor."

The establishment of a British National Veterinary Medical Association, a parent to adopt the children scattered all over the kingdom, may by congressional meetings do much to remove prejudices unfortunately existing both inside and outside the profession, and as a sequence, place veterinary science and its practitioners in the position they should occupy in Great Britain.

Yours truly,

London, W., *August 12th*, 1881. ROBERT WARD, F.R.C.V.S.

THE ENEMIES IN OUR MIDST.

SIR,—There can be no doubt that there exists a small clique in the profession in this country, who are sworn enemies to its best interests. The clique is absolutely insignificant, either in point of numbers—its members might be counted on the fingers of both hands—or in worth, and is formidable only because of the shifts it resorts to to compass its ends, the way in which it tries to attain these ends, and its malignancy. This is well displayed in the efforts it has made to prevent the Veterinary Surgeons' Bill becoming law. No one can deny the vast benefits such a measure would confer; but the clique are the opposite of progressive, and care nothing for the present or future welfare of the profession so long as they can indulge in their evil ways, and oppose what they call "innovations," which are really attempts to raise the profession beyond the level of the horse-shoer. I am given to understand that the Bill is jeopardised by the efforts of Mr. Stephenson, of Newcastle-on-Tyne, who had the audacity to put himself forward for election as a member of Council last May. I fancy if the profession had known the lines he has been working on, he would have had only his own vote to record. I will not attempt to explain Mr. Stephenson's determined opposition to the Bill on physiological or phrenological principles, as some people might try to do, but point out one fact which I think may go some way to account for it. Before me lies a billhead, and on it I find "C. Stephenson and Son, Veterinary Surgeons and Horse-shoers, Newcastle-on-Tyne." Now, there is only *one* C. Stephenson, of Newcastle-on-Tyne, on the register of the Royal College of Veterinary Surgeons. So it seems there be two Richmonds in the field—both veterinary surgeons and *horse-shoers*, but only one is a member of the profession. May this fact not be at the bottom of the virulence displayed against the Bill in this quarter?

It came out at the Congress meeting in London, that three members of Council of the Royal College were also using their utmost endeavour to have the Bill thrown out, but were acting in an underhand manner, and without acquainting the Council. These members were announced to be Messrs. Reynolds and Morgan, of Liverpool, and Mr. Peter Taylor, of Manchester. I do not know exactly on what their objections to the measure are founded, but I know that at a meeting in Liverpool, many months ago, long before the Bill was drafted, Mr. Morgan denounced it as a "mockery," as I fancy he denounces everything else likely to confer benefit. He appears to be nothing more than a fault-finder, an easy function, and cannot lay claim to be a fault-mender. Well, sir, in order to account for the hostility of these three gentlemen to the Bill, I turn to the report of the election of President of the R.C.V.S. for the current year. Mr. Morgan opposed the re-election of last year's President—on *principle*, as he would have us believe—and proposed Mr. Peter Taylor as President, Mr. Reynolds seconding the proposal. It is therefore somewhat curious to find these three members of Council conspiring—on *principle* also, we suppose—against the Bill, and acting surreptitiously in opposition to the Council, the representatives of the profession. In whatever way the profession in the north of England may act towards Mr. Stephenson (we can fancy how the medical profession would treat such an individual), there should only be one way of dealing with members of Council who betray the confidence reposed in them; and it is sincerely to be hoped that the Council will rise to the occasion. If not, then the profession itself must remember what has occurred when election time comes round. The Council should be composed of intelligent, straightforward, and honest men, the best the profession can produce—not members of the *clique*, nor occult enemies of everything except what pertains to the horse-shoeing fraternity. It is high time the

composition of the Council should be seriously considered; at present it can only be described as motley and uneven, if not faulty in the extreme. The strength of a chain is that of its weakest link; the Council has several dangerous links, if the evidence of recent events is to be received.

Yours respectfully,

August 12th. "LANCASHIRE."

THE PATHOLOGY OF NAVICULAR DISEASE.

MR. EDITOR,—In your note in reference to my article on the Pathology of Navicular Disease, in this month's VETERINARY JOURNAL, I find on referring to the *Veterinarian*, 1870, page 186, you stated the same in reference to the anatomy of the joint and the pathology of the disease as you have stated in this month's Journal; and, on page 287, I replied that I had thoroughly examined the cartilage microscopically on each surface of the navicular bone, and that I generally found a few fibres interspersed in the substance of the cartilage on the inferior surface, but not sufficient to constitute it fibro-cartilage such as exists between the vertebræ, the inarticular discs on the tibia, maxillary, margin of the acetabulum, and other joints. In aged animals, articular cartilage has a tendency to become fibrous.

The disease constituting spavin, navicular disease, and ulcerated joints, the effects of external injuries near the joints (direct injury to the capsule of the joint excepted), commences in the bone, and extends to the soft tissues of the joint, and does not, as conjectured by some persons, commence in the soft tissues and extend to the bone. I also stated in my reply, in 1870, that I should be exceedingly obliged to Mr. Fleming if he would show me specimens to support his views, and I now repeat the same, and also state that I shall be pleased to show him, or any other of the profession, more than two hundred specimens in support of my theory. I have one specimen where both surfaces of the cartilage are ulcerated.

The only reason I can assign for the disease affecting the under surface of the bone, to the almost entire exclusion of the other articulary surfaces, is, that that face of the bone is the first to become affected when its natural healthy supply of blood is interfered with. As we become better acquainted with the process of congestion, inflammation, healthy nutrition, and diverted nutrition, we shall then be better able to prevent disease.

Yours truly,

Bath, *July 11th*, 1881. THOS. D. BROAD.

[It is needless to prolong a discussion when neither party will be convinced. It may be only necessary here to repeat that there is no *navicular joint* or *articulation;* that the postero-inferior face of the navicular bone—that in contact with the flexor perforans—is *not* covered with *articular* or *hyaline cartilage*, but with *true white fibro-cartilage*, such as covers other bones (sesamoid, for instance) over which tendons play. This any one can easily ascertain for himself, even without the microscope. Therefore the identity in pathology which Mr. Broad seeks to establish between ulceration as affecting the hyaline cartilage of joints and navicular disease, cannot be maintained on anatomical grounds. We have shown diseased bones for years, the appearances of which undoubtedly proved the correctness of the views we entertain as to the pathology of the malady, and such specimens will be found in every veterinary museum. There are many serious objections to Mr. Broad's view—anatomical, clinical and pathological—and these objections cannot be removed by the arguments as yet brought forward. Disease in the navicular bone and bursa does not differ in its

processes from disease in other bones in connection with bursæ. The specimen we showed at the Tunbridge Wells Meeting of the Southern Counties Society was a case of traumatic navicular disease (accidental opening of the navicular bursa), in which the lesions were in no respect different from those of the disease as we usually observe it.]

PROTECTION TO VETERINARY SURGEONS IN SOUTH AUSTRALIA.

SIR,—It is earnestly hoped that when a penal Act is obtained, and the Veterinary Surgeons' Bill becomes law, both measures will embrace the Australian colonies ; as at present the profession is hampered with a number of empirics with whom there are no means of dealing otherwise than exposing their gross ignorance, which is a most unsatisfactory state of things. Moreover, Veterinary Surgeons in these colonies are compelled to serve on juries, and when the exemption, as provided in the Charter, was pointed out to a presiding judge at criminal sittings, he maintained the Act did not apply here. On behalf of the Australasian Veterinary Medical Association (of which I have the honour to be honorary secretary, South Australian branch) it is sincerely hoped you will use your powerful influence to bring about so desirable a result. I remain, sir, yours most truly,

THOMAS CHALWIN, M.R.C.V.S.,
Hon. Sec. A.V.M.A., South Australia.

Adelaide, South Australia, *June 8th*, 1881.

[We heartily sympathise with our colonial *confrères*, and regret we cannot aid them. Protection must be sought from the Colonial, not the Imperial, Government. The success we have met with here should be a strong precedent, and a guarantee of similar success to them, as our Act is a proof of the necessity for such a measure.—ED. *V. J.*]

A CORRECTION.

DEAR SIR,—Some victories are uncommonly like defeats. Of few undertakings could this more truly be said than of your correspondent "Edward Stanley's" secret campaigns against the contributions which have enlisted my name in your pages, amid all against one which appeared in May last. His defeat is threefold : first, as seen in his attempt to controvert my statements by the force of a flippant letter signed "Edward Stanley ;" second, in the vitiated taste of throwing in another letter, under the covered title of "*Pupil, not Assistant*, W. Anderson," in order to vindicate his former project by a collusion with his assistant ; and, lastly, in the arguments used.

So that an expression of the general opinion aroused, at the time when his first letter appeared, among those practitioners best acquainted with the subject of Lameness, may be made manifest, my friend Mr. Dollar, of London, took up the points advanced through the medium of your Journal, which vetoed the censure given me by an extensive concensus of opinion in favour of my diagnosis. But now the putative assistant, now "*pupil, not assistant*," is induced to say in another matter that, "on Mr. Burke being asked by Mr. Stanley whether he could see anything wrong with the mare, he said, 'No,' when Mr. Stanley told him she had a dead foal in her"! This is an assertion *ipse dixit*, not proof ; for I was never asked any such question, and consequently remained mute, though not a little surprised, in the

matter throughout, the mare at the time performing hard work, as I had occasion to myself witness ; and what I afterwards described of the case in the VETERINARY JOURNAL for May lays claim only to the *diagnosis of the cause of death, Septicæmia, elicited as the result of the necropsy made by me* at the request of Mr. Stanley.

Allow me space to subscribe myself, Sir,

Your most obedient servant,

RICHARD W. BURKE, M.R.C.V.S., A.V.D.

Edinburgh, *7th July*, 1881.

P.S.—As to the second case described, my opinion was no less inadequate than that of Mr. Stanley when he calls it "Vaginitis." The symptoms noted by me—viz., the frequent micturition, the constant straining, and the increased mucous discharge from the vagina—would indicate the existence of Vaginitis, and therefore the designation "Vaginitis" *per se* suggests an idea neither novel nor original. Probably if Mr. Stanley would kindly peruse "Veterinary Obstetrics" somewhat carefully, he would find a reasonable clue to the *cause* of this condition.

CORRIGENDA.

IN the Journal for July, in article on "Surra," at page 2, line 17, for "inflammatory" read "non-inflammatory" ; page 3, line 4 from bottom, remove full stop, and in following line substitute "w" for "W," so as to read, "though it remains more or less capricious with regard to grain" ; page 6, line 13 from bottom, for "layer" read "fluff."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from T. W. Mayer, Aldershot ; W. T. Kendall, Victoria, Australia ; R. W. Burke, A.V.D. ; J. W. Hill, Wolverhampton ; J. B. Wolstenholme, Manchester ; K. Smith, Louth ; W. Williams, Edinburgh ; R. Rutherford, Edinburgh ; T. D. Broad, Bath ; T. Chalwin, Adelaide ; C. Gresswell, Nottingham ; "Lancashire" ; J. H. Steel, A.V.D., Woolwich ; M. Hedley, Dublin ; F. Blakeway, Stourbridge.

BOOKS AND PAMPHLETS : *E. Nocard*, De la Leucocythemie ; *M. Peuch*, De la Garantie dans les Ventes d'Animaux de Boucherie ; *P. Heu*, Les Victimes de la Rage ; *D. Vallada*, Elementi di Giurisprudenza Medico Veterinaria ; *N. Lanzillotti-Buonsanti*, Primo Congresso Nazionale, etc., Italiani ; *C. G. H. Erdmann, und C. H. Hertwig*, Thierärztliche Receptirkunde und Pharmakopoë ; *J. J. Meyrick*, Hindustani Instructions in Veterinary Medicine ; *E. Dele*, Ueber das Rind von Nordamerika.

JOURNALS, ETC. : *Pen and Plough ; The Squire ; La Presse Vétérinaire ; American Veterinary Review ; La Clinica Veterinaria ; Der Thierarzt ; Journal de Médecin Vétérinaire et de Zootechnie ; Wochenschrift für Thierheilkunde ; Recueil de Méd. Vétérinaire ; Annales de Méd. Vétérinaire de Bruxelles ; Lancet ; L'Echo Vétérinaire ; Live Stock Journal ; Field ; Chicago Live Stock Journal ; Medical Press and Circular ; Farmer ; Agricultural Gazette ; Mark Lane Express ; Edinburgh Medical Journal ; Archives Vétérinaire ; Revue Vétérinaire ; Archiv für Thierheilkunde ; Repertorium der Thierheilkunde.*

NEWSPAPERS : *Lahore Civil and Military Gazette ; North British Agriculturist ; Scotsman ; Manchester Guardian.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1881.

CATTLE POISONED BY HEMLOCK.

BY ALEXANDER GUNN, M.R.C.V.S., BALLOAN, BEAULY, N.B.

THE hemlock, or *Conium maculatum*, of the natural order Umbelliferæ, is a well-known biennial plant, its chief *habitat* being along ditches and hedgerows. Apart from its bitter, nauseous taste, the fœtid smell exhaled by all parts of the plant would be thought, of itself, to be proof against animals eating it, yet it has happened now and again that they have eaten it in sufficient quantities to cause alarming symptoms and death. Granting me space in your valuable journal, I will, for the benefit of my professional brethren, give in detail the symptoms and treatment of a case of poisoning by the above plant that recently occurred in my practice.

In a valuable herd of pedigree polled Aberdeen cattle, belonging to E. H. Wood, Esq., of Raasay, Isle of Skye, while grazing in a small park in close proximity to the farm-steading, two of them, being two-year old heifers, were noticed lying stretched and endeavouring now and again to rise, and a yearling heifer was seen staggering and falling on its knees. When examined shortly after, they were found to be very much swollen about the eyelids and head, and a great quantity of frothy saliva was running from the mouth. They were, with some difficulty, removed to a loose box in the farm-steading. They appeared to have lost the power of their limbs, as they could scarcely stand, and one of the animals was almost lifeless.

This happened on the 22nd July last, but, owing to the distance, and the difficult access to the island, I did not see the animals before the evening of the 23rd. On arrival I found that one of the two-year olds had died that morning, and the other animal of the same age succumbed, after suffering great pain, shortly after I arrived; the yearling heifer being now the only one left. The symptoms exhibited in the two animals I saw alive were as follows:—Swelling of the head, which, on manipulation, felt soft and doughy, but without any abnormal heat; eyes dull and pupils dilated; eyelids very much swollen, tears flowing over the cheeks; blood-streaked mucus running from the nostrils; oral breathing; animal showing signs of asphyxia; and a copious flow of frothy saliva from the mouth. The oral breathing was a marked symptom in the three cases; the creatures lay almost prostrate, but making frequent attempts to rise. Pulse, forty beats per minute; temperature 107·2° F. Diarrhœa was present in the two-year old, and constipation in the yearling heifer. The fæces were involuntarily passed in the two-year old; they were very dark in colour and emitted a fœtid smell.

Treatment.—After making a thorough examination of the yearling now left, and gleaning as much information from the intelligent manager as possible, I adjourned to the park grazed by the animals, and had little difficulty in finding immense numbers of young hemlock plants growing round the pond used as a reservoir for the threshing-mill, and also for supplying the animals grazed in the park with water. The weather being warm and sultry, the cattle were noticed, the day previous to their illness, standing in the pond and quietly browsing off its banks. On a close examination of the herbage here, it was found to contain numberless young hemlock plants, which were closely eaten off by the cattle. Having, therefore, discovered the cause, I endeavoured to save the animal still living, the proprietor meantime giving me free access to his well-filled medicine store. I administered, in a drench, one pint of linseed oil and two ounces of brandy, stimulated the spine throughout its whole length with mustard, and gave stimulating enemata. The sides were fomented with warm water continuously for twenty minutes at a time, and his, after a few applications, mitigated the oral breathing. This

line of treatment was persevered with during the night, with the exception of giving small quantities of thin, boiled oatmeal gruel containing the brandy at intervals of three hours. The constipation was obstinate, and no fæces were passed for four days, when they appeared to be very hard, dark, and emitted a very fœtid smell. It was not till purging freely set in that the poor animal showed signs of regaining its strength. Another small dose of oil containing stimulants was administered, and daily thereafter the strength returned till the animal ultimately recovered, though it was very weak, and reduced from its plump condition to almost a skeleton.

The *post-mortem* examination of the animals that died showed the lungs engorged with very dark fluid blood; the heart, also, and the liver contained thin dark blood; the stomach, after its contents were carefully removed, was found to be of a deep red colour, and the intestines throughout were congested in patches here and there. In examining the contents of the stomach, a number of shreds of the young hemlock plant were easily found. The bowels were distended with fœtid gas, and the odour given off from the carcases was so sickening that it was with much pressing I could get any one to lend a hand in moving the bodies.

CASES OF BRAIN DISEASE SUPERVENING ON INFLUENZA AND STRANGLES.

BY F. BLAKEWAY, F.R.C.V.S., STOURBRIDGE.

CASE I.

THIS was a brown gelding, eight years old, one of a farm team. I saw this team on June 5th, when all were suffering from influenza; at the end of the month they were all at work again. On July 26th, I met these horses on the road, when the man in charge complained that the gelding was not doing well and was very dull. I prescribed tonics, rest, and a liberal diet for it. In a day or two the left eye became inflamed, and an abscess formed in the ocular adipose cushion at the back of the eye. This abscess was opened; it discharged freely, and all appeared to be doing well until August 5th, when, although the appetite was

good, the horse again became very dull and listless. This increased until the 8th, when the animal would press its head against the wall, inclining to one side. The pulse was oppressed, and there were marked symptoms of pressure on the brain. On the 9th the gelding became quite comatose, fell down, and died on the 10th with scarcely a struggle. There never was any frenzy.

CASE II.

This was a three years old colt which had Strangles, but as the owner thought it was a mild case he allowed the creature to remain at pasture. On July 29th we were requested to see it. We found it in a low state, with an abscess under the jaw, one or two small abscesses on the face, and a large one about midway down the neck. We ordered it to be put into a loose box, to receive a liberal diet, with tonics, etc. Everything appeared to be going on well until August 6th, when symptoms of cerebral disturbance manifested themselves, and gradually increased in intensity until the colt appeared to be nearly mad. This state continued until the 9th, when the animal became quite comatose and died on the 18th.

In both of these cases the condition of the brain was found on examination to be exactly the same, viz., an abscess existed on the super-anterior part of the left hemisphere of the cerebrum. The dura mater was much thickened on this side, the pia mater had disappeared, and the abscess extended to a depth of one-third of an inch into the substance of the cerebrum. Both abscesses were broken, and laudable pus covered the whole of the left hemisphere.

It is somewhat remarkable that two cases bearing such a strong resemblance to each other, should occur at the same time, and would almost lead us to suppose that there are more instances of cerebral abscess than we suspect. I am inclined to think that the severe winter and ungenial spring, together with the badly-harvested hay of last year, have had much to do in giving rise to the irregular form assumed by Strangles and Influenza this year, particularly in agricultural districts.

A question arises here as to whether cerebral abscesses occur most frequently in the left hemisphere of the cerebrum. All the

instances that have come under my observation have had the abscess there.

I may mention that I took the brains intact, as well as the skulls, to the last meeting of the Liverpool Veterinary Medical Association, as I was aware that there are some members of the profession who maintain that true abscess in the brain never occurs except from injury. But the meeting had such an abundance of interesting matter laid before it by Professor Axe, that I did not have a chance to show my specimens.

EXAMINATION OF BURSATTEE MATTER FROM THE LIVER OF A HORSE.

BY JOHN STEEL, M.R.C.V.S., A.V.D., IPSWICH.

THE following concise statement may assist in elucidating the pathology of this remarkable affection, over which much obscurity has until recently hung. The results constitute a link, almost the final one, in the chain of evidence as to the parasitic nature of the disease. We may summarise the history as follows :—

1. Observations as to clinical features by Western, Hodgson, etc.

2. Long period of indefinite theorising as to true nature.

3. Suggestion by F. Collins, P.V.S. in India, that the disease clinically seems parasitic.

4. Assertion of the presence of a special vegetable parasite of algoid nature in Bursattee growths, by F. Smith, V.S., 12th Lancers.

5. (Present paper.) Observation of a fungal development from the " Specific Brown Cells " of Smith.

6. Culture of Bursattee organism (yet to be tried).

7. Scientifically directed efforts to extirpate the disorder.

The specimen of diseased liver was forwarded to me from India, preserved in spirit. The major part of its substance is not diseased ; but diffused throughout it, varying in frequency in different parts, are very hard diseased portions, varying from the size of a mustard-seed to that of a large green pea. Each mass consists of an outer dense fibrous coating, which is

capable of being peeled off the surface of a stone-like mass, the *kunkur*, but is only separable with care from the surrounding liver tissue. The contents of this coat have evidently been gradually collecting, and with only a limited amount of irritation. This outer coat reminds us of the capsule of an echinococcus. The contents vary in shape, being ovoid, spheroid, bilobed, or assuming one of various irregular forms. Externally this kunkur is of a yellowish-brown colour and very hard, feeling stony against the knife. When cut across, it is found that this brown hard layer only forms a thin outer investment, the interior being composed of softened material, which on exposure to the air becomes of a chalky white colour. In one case I found it somewhat pasty, and soft in the centre; of this, more hereafter. A scraping of the hard investment, examined under $\frac{1}{5}$in. objective, essentially resembles material obtained in a similar manner from the softer interior. The following elements may be observed in each:—

1. Crystals, varying in shape, but fundamentally stellate, the most complex consisting of six arms, each shaped like the sail of a windmill, and serrated on one side. Found most in outer hard layer; rare (*a* in figure).

2. Brown *débris* and scale-like masses, with minute, spherical, highly refrangent nuclei, abounding on the field as well as in the masses, and scattered freely among the brown *débris* (*b* in figure).

3. Undoubtedly fungal elements in direct continuity with the brown elements and spores (*c* in figure).

I deal with the latter first, since I believe I am the first observer of the Bursattee fungus in growth. Undoubtedly it has been seen, but the true nature of the changes going on in the recrudescent stage of a kunkur has not been noted and explained hitherto by any one who has made micro-organisms a special study. I have carefully prepared myself for observations of this nature by study of both higher and lower fungi—a statement which I make that the reader may be assured that I do not treat of this matter lightly, nor without experience. The specimen shows, among others, the following, which I shall describe in the language of mycologists.

(*a*) Hyphal tubes, shooting out from the scale-like and irre-

gular brown masses, which must be considered the (*b*) hymenium, containing spheroidal (*c*) spores, the centres of growth of the

ELEMENTS OF BURSATTEE MATTER.

A. Crystals found in Kunkur, not very frequent. Somewhat resemble those of Hippuric acid and phosphates.

B. Components of ordinary Kunkur. Brown cells or débris, with enclosed or free spores.

C. Fungus elements from a "recrudescent Kunkur."

tubes, for the following may be noticed—two spores united by a short hypha, also spores at intervals along the course of some of the tubes or hyphæ. Sometimes a circular small mass of a brown colour surrounds a spore, and from the mass one or two tubes shoot out; in other parts of the field, we see spherical deep-brown masses of small size, surrounded by a refrangent coat in more or less loose connection with a hypha. Some hyphæ break off towards their free extremities transversely, others have irregular small masses of brown matter on their walls. Occasionally the hyphal tubes bifurcate. These tubes are generally colourless and distinct, but sometimes present a slightly blue colour. (I have figured all these forms from the specimen, June 22nd, 1881.)

It may be objected that these are fungal elements accidentally introduced on the glass used, or in the water added; to which there is a conclusive reply, the hyphal tubes and the brown Bursattee elements are *in organic connection;* the former un-

doubtedly spring from the latter. Again, the kunkur, from which the specimen was obtained, was soft and moist internally *when opened*, and was one of the largest in the portion of liver. Lastly, no hyphal tubes were found in a number of other kunkur nodules examined in exactly the same way, though spores and brown *debris* were observed in each specimen ; in none of these latter nodules had that internal softening which I term the "kunkur recrudescence" commenced.

Again, it may be said, no vegetable organism, such as I have described, would germinate after having been kept several months preserved in spirits of wine. Such an argument would be based on ignorance, for the resistance of fungal spores to disintegrating influences is well known, and in this case there is the investing external coat, and the dense stony outer layer to protect the deeper portion of the nodule. We have now given our facts. Let us see what deductions we can base on them. We may provisionally give the following *Life-History of the Brown Bursattee Fungus of Smith*:—In its dormant stage it forms a mass (resembling to some extent the ergot stage of Claviceps), hard externally, softer internally, owing its hardness to its density and to calcareous deposits, such as we see also in many of our common moulds, and consisting of broken-down fungus elements with spores interspersed. Under suitable conditions this ergot-like kunkur undergo changes, resulting in the development of hyphal tubes from the spores whereby the mycelium of the fungus is formed. The characters of kunkur are such that it is thrown off from the body of the host, under ordinary circumstances, just when such a change is required by the fungus. On the soil, the colour and appearance of the kunkur perhaps serve to protect it from its enemies while it remains entire, but when it disintegrates the spores escape, and having been disseminated after the manner of the germinating elements of other fungi, when they fall on a suitable soil, such as a fresh wound, produce hyphal tubes on which young spheroidal brown cells appear, in their turn to lead to new spores, and then degenerate into the brown *débris* of kunkur. This life-history, though at present requiring confirmation in many points, should lead to the following practical conclusions :—

1. These Bursattee sores, when taken early, should be dressed with such agents as destroy fungi—carbolic, salicylic, or sulphurous acid. Thus an absolute destruction of a Bursattee centre is brought about, for the case is taken before the spore-producing stage.

2. To prevent Bursattee, the minute fungus spores diffused through the air should be excluded from wounds by antiseptic dressings, especially those of Carbolic Acid. The exposed tissues are thus to be rendered a bad soil for the growth of a crop of Bursattee fungus.

3. In old Bursattee sores in the kunkur-producing stage, these hard masses must be periodically removed and destroyed. By removal, we assist nature in her efforts to free the part from these natural irritants. By destruction, we thwart her efforts to propagate the vegetable parasite. At this stage, such dressings as caustic potash should disintegrate and destroy small masses of kunkur. Let it be remembered, also, that such kunkur as remains in the sore will be capable of recrudescence *in that sore*, when, with recurrence of due climatic conditions, its season of activity again sets in; hence, the value of the heroic method of cutting out the whole of the diseased part, or destroying it with the actual cautery.

Thus Bursattee takes its place among parasitic disorders of fungal origin; it is hard to find a parallel to it. Closely resembling certain vegetable parasitic diseases of the skin, it somewhat approaches the Cancers in its power of invading internal organs, as well as the surface of the body. When more is known of the true nature of Cancer, it may be found not unlike Bursattee; but a reference to current literature shows me that I must leave this matter in other hands. We urgently want full and carefully recorded experiments on the communicability of the disease, and also of its microscopic appearances in its various stages (the latter, of course, purely for confirmation of observations recorded by able workers who have before this devoted time and attention to the study).

UNILATERAL CRYPTORCHIDISM.

BY J. COOPER, M.R.C.V.S., 4TH DRAGOON GUARDS, ALDERSHOT.

I AM induced to publish the details of an operation for this form of Cryptorchidism, as each successful case will tend to remove the somewhat prevalent idea that the operation is a formidable one. That such is not the fact, any one who has performed it will, I think, admit.

Those who were fortunate enough to witness Mr. Miles' method of emasculation are unanimous in testifying to the skilfulness he exhibited in castrating "rig" horses; but as he maintained a certain amount of secrecy in connection with the operation, his demonstrations could have proved lucid only to those who paid a premium to be "let in" to the "secret."

The subject of the present communication belonged to a battery of artillery stationed here, and, as the horse had become troublesome, removal of the testicle was resolved on.

Through the courtesy of Mr. Fleming, Inspecting Veterinary Surgeon, War Office, who was on a visit to Aldershot, the case was entrusted to me, that gentleman kindly giving me the benefit of his assistance at the operation.

An examination of the inguinal regions did not lead to the detection of the testicle or testicles, but an irregular cicatrix was discernible on the right side.

The horse having been cast with hobbles in the usual manner, was fixed on his back by placing bundles of straw on each side of the shoulders, the back-rope being applied, and an iron "spreader" placed between the hind legs.

Being thus secured, examination *per rectum* was resorted to in order to discover the number and position of the testicles. Careful manipulation could detect only one lying in the right inguinal canal, one extremity just projecting through the internal ring.

Having made an incision through the skin, where the scrotum should have been, on the right side, I inserted my hand, well lubricated with oil, and proceeded to break down the connective tissue between the integument and the external ring. This tissue was very fibrous and resisting, probably from an attempt to

remove the testicle having been made at an early period of the animal's life. The external ring being reached, very little manipulation served to dilate it sufficiently to admit the hand, which was, with a semi-rotatory motion, passed carefully into the inguinal canal ; the testicle could then be felt in the position before indicated. Some slight difficulty was here experienced in clearing the organ of its envelopes superiorly, in order to allow the chain of the écraseur to be passed round the vessels to divide them. This was quickly effected, however, and without any hæmorrhage. Dense adhesions had been formed between these envelopes ; and a large fibrous band, like a hypertrophied gubernaculum, attached them to the scrotal skin. This had also to be divided by the écraseur, and the organ was then completely removed.

An exploration of the inguinal canal on the other side was now made, and here much less difficulty was found, as the connective tissue was not condensed, and was very readily separable. The internal ring was sufficiently dilated to admit two fingers, which were carefully introduced into the abdominal cavity. The examination proved this testicle to have been removed, in all probability through the incision on the right side, as there was no cicatrix on the left.

The scrotal wounds were cleansed with a moist sponge, no dressing being resorted to. The animal, beyond considerable stiffness and tumefaction for a day or two, suffered little inconvenience from the operation.

The testicle removed was perfectly formed, but much atrophied.

ABSCESS IN THE HEART OF AN OX.

BY J. C. JAMES, M.R.C.V.S., THORNBURY, GLOUCESTERSHIRE.

I HAVE forwarded for inspection a specimen of diseased heart —abscess in the wall of the left ventricle, near the auricular-ventricular opening. The subject was a yearling beast, which was taken ill yesterday (Aug. 28th), and getting worse towards evening, the owner sent for me. Having been out all day, I

sent some medicine, and went this morning, when I found the animal dead.

It was in good condition, and had been quite well, apparently, up to yesterday (Sunday) morning. From what I could gather, the symptoms were, difficult breathing, sometimes moaning; the tongue protruded from the mouth, and the animal appeared very distressed. It died during the night. On making a *post-mortem* examination, I found a large abscess in the liver, and containing about a pint of thick pus. The heart had a portion of the pericardium attached to it, and corresponding to the seat of abscess, which I discovered on stripping off the pericardium. On opening the abscess it contained about a large teacupful of thick pus and a large piece of caseous material. It appears to me to be of a scrofulous nature. You will see it is situated near the auricular-ventricular opening, and on the inside it had just ulcerated through, although the ventricle contained no pus. There are several small places in the heart which appear to be the same disease in its early stages. The other organs appeared healthy.

I sent a similar specimen to Prof. Axe in August, 1873, and a brief report appeared in the *Veterinarian* of Aug. or Sept., 1873. The heart in that case was more extensively invaded—the abscess contained nearly a pint of matter or pus.

[The left wall of the left ventricle contained a cavity $3\frac{1}{4}$ in. in length and 2 in. in breadth, containing a small quantity of partially inspissated pus, and lined by a tolerably thick layer of connective tissue. Its surface was perfectly smooth and glistening, testifying to the considerable age of the abscess. Superiorly it was limited by the auriculo-ventricular furrow, and communicated with the left ventricular cavity near to the auriculo-ventricular opening. Scattered throughout the left ventricular walls were numerous other small abscesses, varying in size from a pin's head to a pea. Beneath the endocardium were several ecchymosed spots, whilst the endocardium itself was much thicker and less transparent than usual. The bicuspid valve was considerably thickened. The muscular substance of the heart was paler than natural, soft, friable, and easily broken down by pressure of the fingers.

The fact of a large abscess being found in the liver, together

with the multiplicity of the abscesses in the ventricular walls, seems to point to their origin as being of an embolic nature. Which of the two (the large cardiac or the hepatic) abscesses was the primary one, is difficult to determine; in either case, however, one would have expected certain lesions in the lungs. Emboli do, however, sometimes pass through the pulmonary capillaries, which are comparatively large, and become arrested in some part of the systemic circulation. Such, probably, has occurred in this instance. The pyæmic nature of the abscesses is further substantiated by the soft, pale, friable condition of the heart itself. Had it been of a scrofulous or tuberculous nature, we hardly think the heart and liver would have been the only organs involved.]

FRACTURE OF ALL THE SESAMOID BONES.

BY R. F. FROST, M.R.C.V.S., A.V.D., RANGOON, BURMAH.

On yesterday, the 3rd of August, I received the following communication:—"I was driving one of my cousin's ponies this morning, from the mill to the office, when he suddenly stopped, and I suspect with good reason, for, judging from the appearance of his off fore leg, I should say that his sinews have given way. The skin is not broken, but I suppose there is nothing to do but shoot him. Would you see him before this is done?"

I visited the pony at once, and found him in the following condition:—The inferior extremity of the off fore metacarpal bone had protruded through the skin, and the animal was resting on the broken end of the bone, somewhat after the manner of a man standing on a wooden stump. The near fore fetlock had descended, and the pony was resting on it to a slight extent. Both hind fetlocks had descended in a like manner, but not to such an extent as the near fore.

On manipulating the joints I found considerable crepitus, which convinced me that fracture of the sesamoids had taken place in all the limbs.

The animal was destroyed at once.

History.—The pony was a "shan," about sixteen years of age, and had been in his late owner's possession for about eight years, during which time he had been remarkably free from lameness. Recently he had been doing very light work, as he was looked upon as an old friend. His only labour consisted in being driven to the Bazaar, a distance of about three miles, every morning, in a light cart, by the owner's butler. I have known the animal for more than three years, and the only occasion on which he required medical attention was about four months ago, when he was pricked in shoeing; but he soon recovered and was again driven to market, as usual, every day.

My first inquiry, on meeting the gentleman who drove him yesterday morning, was as to whether he had, in driving, struck the pony or caused him to make any sudden forward movement. But he assures me that he did nothing to frighten or excite him. He says he was trotting slowly along, and that for the first half of his journey the animal seemed free and anxious to go, but that after a while he thought he seemed lazy and inclined to slacken his speed. Soon afterwards the pony stopped altogether, and the driver, "thinking that something was wrong with a portion of the harness, or that a stone had got fixed in the foot," ordered the syce to dismount and examine the harness and feet. On the syce reporting that all was right, the pony was again urged forward; but, from the peculiarity of the action, which now became a limp, the owner dismounted and found matters as stated in the first part of this paper.

A description of the morbid condition of the parts, examined twenty-four hours after death, may interest your readers, and in hopes that such may be the case I give the appearances of each limb separately.

Left front limb.—On removing the skin from the knee to the foot, I find considerable infiltration into the connective tissue, from a little below the knee to the coronet. This is owing to rupture of some of the small bloodvessels. On removing the areolar tissue, I find the perforatus tendon slightly lacerated in the immediate neighbourhood of the joint.

The perforans tendon is almost completely lacerated at the point where it glides over the sesamoids. On elevating the

tendons, the joint is found open and the sesamoid bones broken into several pieces. Portions of the bones are adhering to the inferior extremity of the suspensory ligament, and other portions to the superior extremity of the inferior superficial sesamoid ligament. Both the inferior articular surface of the large metacarpal and the superior articular surface of the os suffraginis, give indications of long-standing disease. Absorption of the articular cartilage has taken place to a considerable extent.

Right front limb.—To give anything like an accurate description of the state of this limb is quite out of the question, for the simple reason that the joint is little more than a mass of broken bones, lacerated tendons, and ligaments. The main features to be noticed are fracture of the sesamoid bones into innumerable small pieces, rupture of the fibres of the suspensory ligaments, and both a longitudinal and a transverse fracture of the inferior extremity of the large metacarpal bone. The longitudinal fracture has taken place directly through the centre of the bone, and the transverse breakage is about two inches from the extremity.

Right hind limb.—There is considerable infiltration of blood into the areolar tissue around the joint. The tendons are in a normal state. There is a transverse fracture of each sesamoid, near to its base, and there is laceration of the fibres of the lower extremity of the suspensory ligament.

Left hind limb.—Presents exactly the same appearance as the right hind joint.

I have little more to add beyond the fact that the sesamoid bones in all four limbs seemed to have been in a diseased state for a considerable period previous to the accident. The bones, so far as one could judge by the naked eye, appeared to be spongy and brittle; and this, I have little doubt, was the case, considering the extent of the fractures, some of the bones having been broken into innumerable small pieces.

One is naturally puzzled to account for such extensive fractures as occurred in this case, more particularly as the causes in operation seem to be inadequate to produce such marked results. It seems almost incredible that an animal trotting gently along a smooth road, with a light cart behind him, should suddenly give way in the manner described.

Had he been suddenly and violently urged forward, I could understand fracture occurring in one or both fore limbs, but I am quite at a loss to account for the fracture of all the sesamoid bones, and one large metacarpal bone at the same moment, unless it be allowed that very extensive disease of the bones existed previously.

If fragilitas can exist without an animal showing the least sign of lameness, or even stiffness, I can account for the fractures in this case. I have frequently seen the animal in question, both in harness and when being led out of the stall for my inspection, and never, except when he suffered from the prick of a nail, did he show any lameness.

About two years ago a case of fracture of the sesamoids of both fore limbs occurred in a pony five years old, when being galloped over the "maidan" (or plain) at this station. The ground was as smooth as a billiard-table, and there had been no previous disease, so far as I could tell. (I had carefully examined the pony a short time previously.) I must add that this pony had been taken over a few small fences a short time before the breakdown, and I have no doubt that it was while taking one of the jumps that the breakage occurred, though the broken pieces of bone did not separate immediately. It is frequently the case that displacement does not occur for a considerable time after the fracture has been caused. In this case the pony walked about on the ends of his cannon bones, with the lower portions of the limbs dangling about as if they did not belong to them.

Not quite a month ago a gentleman of this station was driving an old pony in a light cart. The animal had been the subject of repeated attacks of rheumatism, and as a consequence there was considerable thickening of the tissues around the fetlock joints. On the occasion in question the owner touched up the old animal rather smartly with the whip, and immediately afterwards the pony came to a standstill, and could not be induced to move further. I saw the animal soon afterwards, and found that the near hind fetlock was resting on the ground, but there was no crepitus. I recommended that the animal be destroyed, and on making a *post-mortem* examination of the limb, I found both fracture of the sesamoids and rupture of the suspensory ligament.

Fracture of the sesamoid bones of the front limbs is not a rare occurrence in India, but I do not remember to have heard of a case in which the sesamoids of all four legs became involved at the same time.

Horses, when they are very fresh and succeed in breaking loose, are liable to injuries of this nature, especially if they jump fences when the ground is very hard; but I think few cases occur under similar circumstances to those narrated in this instance. The case of fracture mentioned as having happened to the five-years-old pony took place during the monsoon, when the ground was soft and elastic.

DIPHTHERIA IN CALVES.

BY S. M. SMITH, M.R.C.V.S., GRANTHAM.

PERUSING Mr. Fleming's paper on "The Transmissibility of Diphtheria" in the August number of the VETERINARY JOURNAL, I notice he refers to the so-called "Tubercular Stomatitis" of calves by Mr. Macgillivray, of Banff. The following facts may be of service in confirmation of the opinion expressed by Mr. Fleming as to the diphtheritic origin of the disease.

On the 2nd of June I was called to see a calf with an affection of the mouth. On examination I found a very extensive ulcer, with a large slough in the centre, and molecular death going on in the surrounding tissue, situate somewhat laterally at the base of the tongue; while there was another exactly opposite, on the buccal membrane, and extending into the texture of the bone. I removed as much of the *débris* as I could see, but the calf gradually became worse, and died about the 10th of the same month. I made a *post-mortem* examination, and found there were other ulcers, which I had been unable to see, at the root of the tongue, and within the fauces and larynx. On opening the chest I found a quantity of membraneous deposit on the pleural surfaces, and attaching the lungs to the sides of the thorax, the lungs themselves being solid with lymphoid material thrown out into their substance. I brought the jaw, tongue, and section of lung with me, intending to bring them to London (on the occa-

sion of the examination for entrance into the army) to show, but, thinking it would be inconvenient and unpleasant to other candidates, I gave the idea up, and when I returned they were destroyed, the specimens having such a very offensive odour. At the same farm, the owner informed me he had had another calf with a similar attack, which was only slight, and that the animal had recovered.

While attending the calf that died, I was requested to castrate eight others; this I did with the same knife that I had removed the sloughs with—but, of course, after washing it. All the calves swelled a good deal at the seat of operation, and there was a blackish-brown exudate, in the form of a membrane, which collected in the scrotum, besides an offensive discharge—the exudate resembling the deposits we find in the prepuce of a bullock, the mucous membrane of which has been diseased. All these calves, however, recovered from the operation. I could not trace tubercular deposit in the slough from the tongue of the first calf, neither had the lungs any appearance of Tuberculosis. So far there have been no fresh outbreaks on the farm. I do not attribute the swelling which occurred in the other calves to inoculation, but believe they were exposed to the same influences as the calf that died. But it shows how careful we should be in operating on farms where there is any other disease existing of a contagious nature, and also to be sure that our instruments and hands are free from discharges. I do not wish by these remarks to imply that the disease observed by Mr. Macgillivray is not tubercular, as this is the only case of the kind I have seen, and it may not correspond to those observed by that gentleman.

With reference to Mammitis in this neighbourhood, it is almost periodic—so much so, indeed, that it is necessary to have prepared a large quantity of dressing for the mammæ. It is attributed in this locality to atmospheric changes, and is always prevalent after continuous rains, occurring in cows before and after calving, as well as heifers and "drapes," when lying out on damp pastures. We have never looked upon it as contagious, and have had no reasons as yet, in this neighbourhood, for thinking it is so. What relation it may bear to Diphtheria I am unable to say.

THE TRANSMISSIBILITY OF DIPHTHERIA FROM ANIMALS TO MANKIND.

BY GEORGE FLEMING, F.R.C.V.S., INSPECTING VETERINARY SURGEON, ARMY VETERINARY DEPARTMENT.

IN the paper read by me before the Epidemiological Society at University College last May, I gave all the facts then accessible to prove the possibility or certainty of transmission of Diphtheria from animals to the human species. Since that time the following interesting account of an outbreak of the disease, published in the *Sanitary Record* for March 15th, 1881, by Dr. McEwen, has been brought to my notice. As it bears upon the subject of my paper, I beg that it may be received as a supplement thereto. Dr. McEwen writes :—

"This painfully interesting disease—at least, painfully interesting to those who have seen it in its most virulent form, cutting off whole families in periods of time varying from a few days to a few weeks—bids fair now to be better understood than it ever has been. It is to be hoped that, with clearer views of the etiology of the disease, the treatment may be more successful than in a great many instances it has hitherto been, and that in a short time medical men shall be saved the pain of seeing strong, healthy subjects suddenly cut off by a disease that in its worst form has so fatal a tendency.

"It fell to my lot to observe a peculiarly interesting and fatal outbreak of Diphtheria in a rural district in the north of Scotland in the autumn of 1878. The burden of the outbreak fell on a brother country practitioner. It was in the month of August that the disease broke out at a farmhouse in the county of Aberdeenshire. Most of the individuals about the farm (including the servants) were adults. Within a short time, of nine individuals who were attacked, seven died. My friend, the medical practitioner in attendance, at this time delivered the wife of a mechanic who lived at least five miles from the seat of the outbreak. Within a few days of her delivery, Diphtheria appeared in the family, and in a few days more the father and five children were dead of Diphtheria. About the same time he also attended in her confinement the wife of a farm labourer in a small

village further away from the seat of the outbreak. Here, too, not many days afterwards, Diphtheria attacked the family, and carried off father, child, and mother. I here assisted my brother practitioner to perform tracheotomy, in the hope of saving the man's life. While in the house the wife complained of being ill and having a sore throat, and on looking into it there were Diphtheria patches to be seen. I learned afterwards that she also had diphtheritic patches on the vulva. I believe there was also another instance of the unfortunate coincidence of the disease following so fatally in the wake of the obstetrical track of the practitioner in attendance at the seat of the outbreak. This 'unfortunate coincidence,' as I called it at the time in some notes on the treatment of some of my own cases contributed to the *Practitioner*, seems to me now more forcibly than it did even then to be more than a coincidence, and I strongly incline to the view that the public took at the time, viz., that the doctor was the medium through which the infection was carried from the original seat of the outbreak. Nothing satisfactory as to the origin of the outbreak itself could be learned, though there was a popular notion, held by a number of people in the neighbourhood, *that the water used at the farmhouse where the disease first appeared had been contaminated by the decomposed body of a calf said to have died of some throat disease a considerable time before, and to have been buried in such a position that the moisture from it might contaminate the water in the well from whence the drinking-water was drawn.* Popular notions are apt to be despised, and in this particular case I know the notion was despised by those whose opinions were, or ought to have been, of most value. Nevertheless, it is quite possible that the particular organism which at first caused the outbreak of Diphtheria was here generated according to the popular view held at the time, and also that, owing to an innocent want of due caution on the part of the medical attendant, these germs were by him carried far away to other homes, there to develop. Personally I had these suspicions at the time, and I took every precaution, by washing my hands carbolically after seeing a patient with a sore throat of any kind, and by never attending a midwifery case in clothes that I had on when seeing a case of Diphtheria."

GANGRENOUS STOMATITIS—TUBERCULAR STOMATITIS—DIPHTHERITIS?

BY A. E. MACGILLIVRAY, BANFF, N.B.

SINCE the publication of my communication on the above subject, in the VETERINARY JOURNAL for June last, the discussion on same has assumed a new phase—see Mr. Fleming's paper in the September Journal. M. Lenglen, of Arras, designated the disease Gangrenous Stomatitis, while I submitted data to show that it was rather Tubercular Stomatitis; but it seems, from Mr. Fleming's paper, that it had long previously (1877) been correctly named "Diphtheria" by Professor Dammann, of the Hanover Veterinary School.

Although admitting that the cases reported by Dammann are unquestionably analogous to those so often occurring in my practice, I must be allowed most emphatically to question the accuracy of his nomenclature; it is too serious an assertion to be proved by any data brought forward by the worthy Hanoverian professor, whose general trustworthiness, however, I don't for a moment seek to impeach.

The non-identity of this bovine Stomatitis, whether gangrenous or tubercular, with the fatal Diphtheritis of the human subject, will not be a difficult matter to render apparent. The distinctive characteristics of Diphtheria are so well marked that one would think it next to impossible to confound its peculiarities with those of Tubercular Stomatitis; it will happen at times, however, that conclusions will be arrived at with no sufficient evidence to support them: and so it is in this instance.

It were needless here to reiterate all I have written (in the VETERINARY JOURNAL for January and May) about the nature of what I call Tubercular Stomatitis; I shall simply endeavour to show the inaccuracy of attempting to prove that the proper designation of the disease is Diphtheria; and in doing so I will compare, and show the diversity in, the leading characteristics of both diseases—*i.e.*, Diphtheritis and Tubercular Stomatitis.

1. The most distinctive feature of Diphtheria is the formation of false membranes at the seat of the disease; in bovine Tubercular Stomatitis there are no such formations.

2. Diphtheria almost invariably confines itself to the pharynx and immediately contiguous parts; while Tubercular Stomatitis, as has been amply shown, chiefly attacks cheeks, tongue, gums, etc., and very rarely descends to either pharynx or larynx.

3. Diphtheria is generally ushered in by high fever, chills, nausea, vomitions, loss of appetite, etc., a state of matters quickly followed by tumefaction and exudation inside the throat, the exudation forming or being followed by false membranes of greater or less calibre; in juvenile bovines the reverse is the case, for the patients take their diet as usual, the first symptom of anything wrong being generally profuse salivation, which leads to examination of the mouth, and so to discovery of the disease.

4. In Diphtheria we have almost always swelling (outside) of the throat and neck; in this Stomatitis of calves, I have never seen swelling externally anywhere but at the cheeks, and lower lip when the anterior part of the inferior maxilla became the seat of the diseased deposit.

5. Albuminuria very often accompanies Diphtheria in the human subject, but I have never seen nor had reason to suspect anything of this sort in calves.

6. Different kinds of paralyses often occur in diphtheritic patients; but in dozens of cases of this peculiar Stomatitis in bovines, I have failed to meet a single instance of paralysis.

7. The nasal passages and eyes not unfrequently become affected with Diphtheritis, false membranes form, and severe epistaxis sometimes occurs; in the subjects of Tubercular Stomatitis I have never met with either of these complications.

8. One of the things to be most dreaded in all cases of Diphtheria is the occurrence of malignant blood-poisoning, which, of course, cannot well end otherwise than fatally. Now this is a *finale* which has never occurred, in my practice, amongst calves affected with Tubercular Stomatitis.

9. In several cases of this Stomatitis in bovines, I have excised or scraped away from one to two inches at the anterior part or tip of the tongue, the whole substance of the tongue at that part and to that extent having become completely destroyed by the disease, and recovery in all such cases has followed. Now, I can find records of no such occurrence or experience in medical literature;

I don't even find mention made of any formation, however slight, of false membranes about the anterior part of the tongue.

10. On several occasions where the Tubercular Stomatitis has been located at the anterior part of the lower jaw, the disease has dipped so deep that I have had to draw from one to four of the deciduous incisors, and also] scrape away part of the jawbone. Nowhere can I find record or mention made of anything similar in the annals of Diphtheritis.

11. Even when this bovine Stomatitis attacks the entrance to larynx, the poor little patients will suck or drink their usual supply of milk, and only succumb to *suffocation*, which is actually the result of the *mechanical* obstruction of the diseased deposit or growth ; it is quite the reverse with diphtheritic patients, for they generally lose appetite and all anxiety to partake of nourishment from the first, and sometimes die without the formation of the very slightest false membrane.

I might still further extend the list of antagonisms between the two diseases, but I opine doing so would be quite superfluous, as their non-identity is only too evident.

In Mr. Fleming's interesting article on *Diphtheria*, there are one or two statements so ambiguous as almost to call for flat contradiction : I refer to the following, (1) He says, speaking of this supposed bovine Diphtheria (page 162), "The presence of micrococci is diagnostic of the disease ; and (page 166), "Calves are extremely rarely affected with Tuberculosis."

To say that micrococci are diagnostic of this or any other disease, *in particular*, is simply saying what does not coincide with well-ascertained fact ; for micrococci are found under a great many pathological conditions, such as—in the pus of Small-pox and Sheep-pox, in the blood of putrid fevers, in the pus of most suppurating wounds, in Erysipelas (Harley), and also in Diphtheria ; and I have myself seen them in tubercular matter. These same micrococci, according to some authorities, are spherical bacteria, according to others they are spores of some fungus. More than this, however, certain other authorities maintain that these micrococci, bacteria, etc., are found in millions on healthy surfaces—such as dorsum of tongue, and intestines (Beale), and that they will remain inert on these healthy surfaces, but let them

come in contact with disease tissue or deposit, and immediately activity is rampant, and they will multiply *ad infinitum.*

Micrococci are, therefore, rather concomitant with, than causative of, disease.

Any one interested in the part played in the animal economy, during health and disease, by micrococci, bacteria, spores, conidia, mycelia—in fact, all "disease germs"—can do nothing better than consult the writings of Beale, Harley, and Morrell Mackenzie. There they will find, in good plain English, all *reliable* information on this subject, discussed in quite an unbiassed manner, thus saving the immense labour of wading through and translating foreign authorities.

Mr. Fleming's other statement, that "calves are extremely rarely affected with Tuberculosis," is one that requires only the experience of country practice to show its inaccuracy. As a rule, calves are *fully as often* the subjects of Tuberculosis as any other class of bovines, and I can confidently submit this statement for confirmation to the practically experienced part of our profession. Look to how many sources of contamination calves are open: they may receive it hereditarily; they may imbibe it with their daily nourishment—milk; they may contract it by cohabitation; and their tender age renders them far more susceptible to the reception of the tubercular virus from either of these sources than adults.

Mr. Fleming himself, in so far as I mind, states that milk from tubercular cows is a fruitful source of infantile Diarrhœa, which Diarrhœa results from the irritation caused by the reception of the tubercular virus in the mucous membrane of the intestinal canal. This Diarrhœa is very fatal in children.

In veterinary practice, what is called "White Scour," and "Red Scour," is quite common in calves, and I have reason to know that both these kinds of Diarrhœa are often the result of feeding the calves with milk from tubercular cows. When cough and nasal discharge occur along with "White Scour," the case is clearly one of tubercular origin; and where there are several calves, the malady will not be confined to one, but will spread very quickly if the utmost precaution be not observed. I have made *post-mortems* in a great many such cases, and I can confidently say

that their tubercular origin was but too plainly observable. I have known as many as ten calves succumb at one farm in such an outbreak.

In conclusion, I may be allowed to ask what Mr. Fleming means, when he refers to my description and diagnosis, by saying that "there is evidently nothing analogous to Tuberculosis in the lesions?" Did I not distinctly say that the material from the sores was tubercular? Did I not bring forward data to prove that the patients were almost all traceable to a tubercular origin, or had been in close connection with, or partaking of milk from, animals with tubercular diathesis?

In the VETERINARY JOURNAL for July and August, 1880, in Mr. Fleming's paper on "Tuberculosis," will be found sufficient proof that *all parts of the mouth*, gums, fauces, tongue, palate, etc., are subject to tubercular deposit and ulceration; in fact, Mr. Fleming there tells us that the mucous membrane of the pharynx, etc., may be and has been found thickened, ulcerated, and covered (?) with cheesy deposit, and the base of the tongue with greyish-yellow deposit, and all this from the contact of tubercular matter with these parts. If this be not "Tubercular Stomatitis"—in plain terms—what is it?

Considering all this, it is somewhat questionable to find Mr. Fleming asserting that what I have seen and examined minutely in numerous instances, is "nothing analogous" to what I took it to be—namely, tubercular matter.

[Comments on this communication are reserved until next month.]

ON THE REFUTATION OF THE SO-CALLED SPONTANEOUS GENERATION OF CONTAGIOUS DISEASES; 2. DISEASE GERMS *SUI GENERIS* THE ESSENCE OF CONTAGION, AND DISEASE GERMS CARRIERS OF ANTECEDENT CONTAGION.

BY RICHARD W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

IN most discussions on the subject of spontaneous generation of contagious disease, disciples of two very diverse schools of

thought take part, viz., those of the *contagious theory* and those of the *spontaneous theory*. Unfortunately for the interests of the subject, and greatly to the confusion and detriment of the humbler followers of these schools, the respective exponents apparently consider their views strengthened and their ends furthered by adopting the most extreme cases as examples, and thereby passing out from the general field, and becoming *ultra-contagionists* or *ultra-spontaneists*, as the case may be. So general is this condition, that a *moderate member* of either branch is decidedly a rarity, if there be one, and few enter the arena of discussion with minds unbiassed and unprejudiced, and ready to judge by generalities, not by exceptions. The general practitioner, perhaps inclined, say, to embrace the *germ theory*, finds, in testing it by the standard of every-day experience, that the brilliant and lucid examples spoken of at meetings, etc., are absent, or but rarely found—that the majority of his cases can only occupy a position *mediate* to the clashing statements to which he has been a listener ; the result being that he either abandons both in disgust, or holds by the doctrines endeared to him by age and the precepts of his predecessors. This evil would be avoided if either party deigned to take the *middle* course, by bringing forward cases which would not, perhaps, convince the bigoted, but which, being capable of every-day demonstration, would be appreciated by the many, and thus serve to terminate the question, by a real appeal to the merits of the various theories.

From discussions which have come under my notice, it has occurred to me that many who speak of spontaneous generation (Heterogenesis) do not, apparently, conceive its true significance, inasmuch as they suppose that a disease not a product of antecedent disease is necessarily *spontaneous*. Again, on the other hand, we hear the first authorities in the profession—medical and veterinary-medical—endeavouring to link contagion with contagion (and this not incorrectly, in many cases), and affirming that where there is a missing link it is not because the chain is imperfect, but because our means of observation are imperfect, or our efforts have been expended in following a wrong clue, or, in other words, that contagion is *always traceable*, discernibly

or indiscernibly. Now, this is only partially, not wholly correct; for a disease may not necessarily be *always* traceable, either discernibly or indiscernibly, to an antecedent case, and yet *not be spontaneous*, in the accurate sense of the term. To this, explanation is necessary. A disease germ is a true seed, identical, physiologically, with a vegetable and an animal germ, and created in the beginning, like all living things, it has flourished side by side with animals and with plants, and it, everywhere and at all times, surrounds the earth. Now, change, constant change, is an universal law of nature, and neither the animal nor the vegetable kingdom can enjoy a state of perfect rest. A land which has once flourished will, without warning, be swept by the visitation of a sudden and terribly infectious epizoöty, due, perhaps, to an outburst of disease germs from under the earth's surface, or to their abundant harbour in the surrounding media from afar. Yet, can the development of the epizoöty through such media be said to be *spontaneous?* and is it traceable to an antecedent case? The seed of disease which is everywhere and at all times present, only awaiting a cause to set it into activity, can a disease dependent upon its development, although not traceable to previous disease, be considered "spontaneous"? A contagious disease is, therefore, neither spontaneous nor *necessarily* a product of antecedent disease. But that the great majority of cases are traceable to antecedent disease I am not loath to admit.

Broadly stated, then, my deductions are two: 1. Contagion is not necessarily a product of disease, although a cause of it; 2. Spontaneous generation is a thing impossible. It is possible, therefore, for Rabies to be developed *independent of the saliva* (or any other product) *of a rabid animal received into a wound*, and yet not be spontaneous.

In offering these remarks, I am unaware if they are new to the profession, and in doing so I feel that they are exposed to the scrutiny of those whose thinking powers vastly transcend any which I can bring to bear on the subject.*

* This is a verbatim extract from an essay on "Loodianna Fever," read by me before the Edinburgh Veterinary Medical Association, on the 15th of March, 1881. In the *Medical Press and Circular* for May 11th, 1881, I find

By those who support the spontaneous nature of contagious disease the arguments chiefly urged are: 1. Want of proof of its introduction. 2. The frequent escape of those in the midst of the affected, and the occasional sporadic nature of the malady. 3. The immunity of many places within the affected districts. 4. The limited extension of the disease in certain outbreaks. 5. The disease being frequently incapable of limitation by sanitary measures. But in all these cases it has been found, when narrowly examined, that although probably true in a few hastily observed and in exceptional instances, their general truth is negatived by abundant testimony to the contrary; and in cases where such testimony was wanting, the cause was hidden from us, but which, if revealed, would divulge the essence of the disease. Some have sought to modify the now prevalent view of the exclusively *germ origin* of contagious disease, and have acceded to analogous instances vindicated by "statistics" gleaned from private practice, which are so extremely inconclusive as to make it almost puerile to have brought them forward.* One authority to the present day actually maintains that the instrumentality of food alone is necessary to the development of a well-known specific communicable disease! a disease experimentally demonstrated to be due to the presence of well developed bacteroid forms—*bacilli*.

II. What part does sanitary science play in the prevention of contagious disease?†

For any contagious disease to be rife two conditions are necessary:—

1. That the pabulum adapted for their germs be present, *i.e.*,

that the editor of that journal in many respects supports my own views expressed on the subject, and quotes the words of Dr. Guy and others on the same point.

* Those desirous of acquiring much valuable reliable information may consult, with benefit, the paper on the subject of Contagion by Mr. Fleming, contained in the VETERINARY JOURNAL for June and July, 1880.

† This is also a true extract from the same essay read by me in March last. It, too, is well brought out by the remarks of the editor of the *Medical Press and Circular*, 11th May, 1881. I received no light censure for having promulgated these views on the subject, but I trust I am not "*in a dream*" when such an able authority as the editor of the above journal is, in the main, of the same opinion as myself on the subject.

the animal's system be in a favourable condition for their germinative invasion.

2. That the conditions favourable to their abundant development exist, *i.e.*, the surrounding conditions of the animal be debilitated, from sanitary failure, inducing increased harbour and free multiplication of germs in that surrounding.

The principal predisposing causes of all contagious diseases are two :—1, That the animal's system be lowered ; and 2, That its surroundings be correspondingly lowered. The first of these is only too well recognised ; the second is almost altogether lost sight of—at any rate, it is not viewed in the same light as here represented.

Bad sanitary management is thought *per se* to occasion a contagious disease ; but this is a statement fraught with absurdity. It acts simply as a *predisposing* cause, and this in two ways, viz., 1, *directly*, by inviting germs ; 2, *indirectly*, by deteriorating the animal's system, weakening its functions, and rendering it directly susceptible to bacterial onslaught.

Bad sanitary management, whilst a contagious disease is rife, and, in the case of foreign diseases, whilst their germs are still buried in the neighbourhood, however, acts also as an *actual* cause, by favouring the *conveyance* of the contagia.

The regulation of sanitary measures, therefore, in the latter case (whilst contagion is rife) constitutes a *curative treatment ;* whilst in that of the former (during debility of the surroundings) a *protective* and *restorative treatment.*

But to speak of "permanently" stamping out *indigenous* (*native*) contagious diseases from a country, by even the most stringent sanitary exercise, is a fallacy. We can, however, aspire at such success accruing in the end only in the case of *exotic* (*foreign*) diseases, such as Rinderpest, which we know to have had its origin in Russia ; Distemper in the dog, which is believed to have been brought from Peru (?) ; and other analogous diseases. The latter are capable of extirpation, whilst the former are only capable of modification and temporary abatement. And yet, is not sanitary science to be regarded as an essential subject, if it has achieved this much alone ?

An epidemic (epizoöty) may be said to be the result of a

lowering in the vitality, hygienic conditions, of a locality. Just as an animal system is predisposed by debility from any cause, so, in like manner, are the surroundings in which that animal is located predisposed to disease impressions, to harbour disease germs, from the surrounding atmosphere, as the result of lowering influences occasioned by bad hygiene. In other words, the debility of a locality is the result of bad hygiene.

Editorial.

OUR MOMENTOUS VICTORY.

On September 27th, the day on which Parliament was prorogued, the Veterinary Surgeons' Bill received the Royal Assent, and became law. On that date it was indelibly inscribed on the Statute Book of the realm as the "Veterinary Surgeons' Act, 1881," and several months of intense anxiety and toil on the part of the promoters of the measure came to a happy and almost unexpectedly satisfactory termination. Those of the profession who have, with fear and doubt for its ultimate success, watched the progress of the Bill through both Houses of Parliament, will feel a sense of relief in the knowledge that it is now safe, and rejoice to be informed that it has experienced no damaging alteration in its passage through the Commons, as was anticipated, but that it left the Lower House in the same condition, practically, as it left the Upper House. This is indeed a matter for the warmest congratulation, as there were two or three clauses in the Bill which the most sanguine amongst us could scarcely hope would pass the Commons in the form in which they passed the Lords. Not that the victory has been an easy one, for the opposition in the Lower House was of the most obstinate and formidable character, and at one time looked as if it would really be successful; not because it had any substantial foundation, but from the fact that the session was nearly over, and Government business was so much in arrears that opposed or "blocked" Bills had scarcely a chance of advancing a step. As was reported in our Parliamentary Intelligence for last month, there were no fewer than five distinct motions on the paper to have the Bill thrown out, as well as an amendment which would have had the same effect, and other amendments that would have seriously impaired the value of the measure. How the opposition was cleared away, and how the most pernicious of the amendments were got rid of, would form, perhaps, a rather tedious story to our readers, and one not particularly rife in pleasant reminiscences to those who had the task of demolishing the obstacles in the path. Suffice it to say that these obstacles were encountered and surmounted, and the enemies of the Bill utterly discomfited and ignobly defeated.

By the passing of the Bill the veterinary profession in this country, and indeed in all English-speaking countries, has achieved one of the

most important strides ever yet attempted by it, and one which is pregnant with great results. For it cannot be doubted that our Colonies, having before them the precedent afforded by the mother country, will readily grant protection to duly qualified practitioners who have to contend with unqualified, and in too many instances utterly incompetent, men, greatly to the disadvantage of the public. And even the United States of America, overrun with impostors of every kind, may now see reason to protect and encourage those who have, at heavy sacrifices, prepared themselves for the successful practice of veterinary medicine and surgery.

It is needless to note that, had the Bill been lost, the misfortune would have proved a most serious one, just as its success is one of the brightest bursts of sunshine that has ever been shed upon us. For though we should have undauntedly carried it into Parliament again next session, and the next, and the next, so long as life continued, yet it is not to be concealed that the difficulties would have greatly increased, while the sense of defeat would perhaps have somewhat paralysed the necessary action.

The urgent and absolute necessity for the protection of the veterinary profession and the public from the injury caused by unqualified, and only too frequently most disreputable, ignorant, and dishonest men, has for years been only too apparent, as the number and audacity of these has been rapidly on the increase. Those who best understood the position and requirements of veterinary medicine in these kingdoms had long recognised the need for legal intervention—an intervention which had been successfully invoked to protect and encourage every other profession. The Charter of Incorporation, granted in 1844, was only a small step towards the realisation of this object, as it did little more than constitute the profession a Body which had but trifling power or influence in improving it, or in promoting the welfare of its members, and certainly was utterly impotent in protecting their rights. Its helpless condition has ever been a source of unmitigated regret, and almost despair; for so long as it remained in this plight nothing could be expected but discouragement and annoyance—felt all the more when attempts were made to raise the standard of education, or the position of the profession in this country.

The time had therefore more than arrived when, if it was ever to be done, this state of affairs should be remedied, and the task commenced in 1844 completed. But it was only too evident that, from various causes, the profession could of itself do but little towards the accomplishment of such a work; its influence especially was not sufficiently strong to contend successfully with the opposition certain to be met with; and the disunion existing in its own ranks would still further paralyse it. From the close relationship of the President of the Royal College with the Royal Society for the Prevention of Cruelty to Animals, and the interest it has always manifested in the veterinary profession, its powerful aid was sought in procuring the much-needed protection. On the assumption that the title of veterinary surgeon belonged exclusively to the graduates of the Royal College, a Bill was

drafted with the object of making it illegal for any other persons to retain or adopt this title, or that of M.R.C.V.S., though it did not prohibit them from practising under any other titles. The President of the Society, Lord Aberdare, consented to take charge of the Bill in the House of Lords, and a re-draft having been executed, it was introduced into that House. It was then found that the graduates of the Royal College had no just claim to be exclusively designated Veterinary Surgeons, as there was no law to prevent any one adopting the title; and anything that was done in the way of restraint must be prospective. A Charter does not constitute a law, but merely confers privileges which, again, have to be protected by Act of Parliament. This protection our Charter had never received, and therefore those who assumed the title of veterinary surgeon were not acting unlawfully. The Lord President of the Privy Council, Earl Spencer, than whom the Royal College never had a warmer friend, saw the unfortunate position in which the profession stood, and did his utmost to ameliorate it. After much writing, consultation, and deliberation, a number of amendments were introduced by him into the Bill, which was thereby almost completely changed in aim and scope, and vastly improved. Recognising the fact that those who had adopted the title of veterinary surgeon had not infringed any law, and that consequently they could not be deprived of the title, it was at first decided that from and after the passing of the Bill no other persons should be permitted to so designate themselves, as was the case with regard to the Surgeons' and Dentists' Acts. But the strongest possible arguments were employed to make the operation of the Bill to some extent at least retrospective, and these had some effect; as this retrospect was eventually carried to five years, on the plea that during this time the period of study had been increased, and the examinations for the diploma of the Royal College been made much more stringent, that nearly all the rejected students went into practice under the title, and that the number of incompetent unqualified men had become vastly augmented. Though there was little prospect that this concession would be granted by Parliament, as laws are, as a rule, never made retrospective, it was admitted into the Bill.

With the progress of the measure through Parliament our readers are already acquainted. That it is now law is largely due to the Society for the Prevention of Cruelty to Animals, and its excellent Secretary, Mr. Colam—no less than to its noble President, Lord Aberdare. A full measure of gratitude is due to these, as well as to the Lord President of the Privy Council, and the Vice-President, the Right Honourable A. J. Mundella, to whose care the Bill was consigned in the House of Commons, and to whose determination and judicious management the passage of the measure intact through that House is mainly to be ascribed. There are others to whom sincere thanks must be tendered, for their generous assistance in passing such an important Act in favour of a profession which has hitherto had but few friends in these kingdoms, and has had to fight its way to the front as best it might.

The history of the Act has thus far been dealt with, and it will now be necessary to briefly glance at the practical scope and effect of the measure, which is annexed to this article.

In the first place, it places us on a footing such as we have never enjoyed in this country, but which has been accorded to other professions. The Royal College of Veterinary Surgeons is now recognised and legalised by Act of Parliament, and brought into direct *rapport* with the Government, as the medical profession now is through the Medical Council; and this is an advantage not to be overlooked, as it gives the nation a direct interest in our success and material prosperity, while relieving us of some serious responsibilities. Clauses 3, 5 to 13, deal with the very important subject of Registration, as the Register of Veterinary Surgeons shall be accepted as evidence in all cases that the persons therein named are *legally* registered. These clauses provide for the publication and correction of the Register, and the removal or restoration of names. Clause 6 defines the conditions and offences upon and for which the names of *mauvais gens* who dishonour the profession may be removed, empowers the Council of the Royal College to remove them, and shields that body from prosecution by giving the culprits right of appeal to the Privy Council. By Clause 10, the registrars of deaths in the United Kingdom must report the decease of registered practitioners; and Clauses 11 and 12 give the penalties for obtaining registration by false representation or wilful falsification of the register. In Clauses 13 and 14, provision is made, subject to the decision of the Council of the Royal College of Veterinary Surgeons and the Privy Council, for the registration of colonial and foreign practitioners who hold recognised diplomas. The fairness and generousness of this are obvious; for while we are free-traders in science we could not decently compel graduates in science to enter our schools as students, and graduate again before being eligible for registration. We trust our foreign colleagues will appreciate and reciprocate this compliment. Clause 4 is of minor importance, as it merely provides for the examination of veterinary students in the three kingdoms, provision for which had already been made in the byelaws of the Royal College; while Clause 14 gives parliamentary confirmation of the charters of the Royal College.

Clauses 15, 16, and 17 are, doubtless, the most important in the Act. The preamble states that it is expedient that provision be made to enable persons requiring the aid of a veterinary surgeon, to distinguish between qualified and unqualified practitioners; and this the clause does, by requiring that the former shall occupy one register, and the latter another register, the two being perfectly separate and distinct, and the unqualified being placed under the heading of "Existing Practitioners," to distinguish them still more from the qualified, while it is explicitly stated that they are not to be deemed members of the Royal College. Surely, no greater benefit than this could have been desired under the circumstances. The more reasonable members of the profession have never expressed a wish for more than that the public should be able to distinguish between the qualified and unqualified, and here the wish is gratified; for the register, which is to be accepted as evidence in courts of law and elsewhere, plainly and distinctly indicates who are and who are not qualified. Surely there is nothing undignified or

humiliating to the profession by this registration! And this distinction will be no benefit, we venture to think, to the unqualified, except in so far as it will protect them from the penal operation of the Act as applicable to unregistered persons. But in order to be registered as an unqualified practitioner, a person must furnish the strongest proof that he has continuously practised veterinary surgery in the United Kingdom for not less than five years before the passing of the Act, and pay such fees and conform to such other matters as the Council of the Royal College, with the sanction of the Privy Council, requires. Registration must be effected before August 27th, 1882, after which no unqualified person can be registered; so that, practically, the law only allows those who practised veterinary surgery previous to August 27th, 1876, without qualification, to register, and these must comply with paragraph 2 within another twelvemonths. Clause 11 will apply to these persons, so far as false representation is concerned, as well as Clause 6 for removal from the register for disgraceful conduct. It must be remembered that every year the register of unqualified persons will diminish, until finally it is a blank; while that of the members of the Royal College will increase until, we pray, time itself shall cease. Clause 16 renders it penal, from the passing of the Act, for any person not being a fellow or member of the Royal College, to adopt anything in the way of name, title, addition, description, initials, or letters after his name, or otherwise stating or implying that he is a graduate of the Royal College. What more could be desired in the way of protection to the profession, or the prevention of imposition? Clause 17 virtually extinguishes the unqualified practitioner after 1883, as unless a person is registered, or at the passing of the Act held the veterinary certificate of the Highland and Agricultural Society, he cannot practise under any name or title, neither can he sue for services rendered with respect to veterinary medicine or surgery. Clause 19 specifies that prosecutions may be instituted by the Royal College, or by private persons with its consent. Clause 20 is evidently superfluous, and was tacked on to the Bill as an amendment by Mr. Newdegate, M.P., on behalf of the Royal Veterinary College.

Such are some of the more important features of the Veterinary Surgeons Act, though there are others less obvious, but none the less valuable; and we are certain it will be hailed by those who know the position and requirements of veterinary science in this country, as the greatest boon that could possibly be conferred upon it. Our profession is now freed from the fetters that have for so many years cramped and crippled it, and is lifted out of the slough of despondency and degradation in which it had hitherto helplessly lain. In the honourable position in which it is now placed by the country, it has a bright present and a brilliant future, if it only be true to itself, and employ to the best advantage the privileges which accompany its emancipation. The benefits the Act confers are great now, but as time rolls on they will increase in value and magnitude; a sure foundation has been laid for an ever-progressing and prosperous career, and as the nation has so generously and liberally recognised our claims, so it will, doubtless, expect that we

shall not abuse the trust and confidence it reposes in us. Heavier responsibilities are placed upon every member of the profession, but particularly upon the Council of the Royal College; but we are confident that these responsibilities will be neither timidly evaded nor lightly encountered, and that an honest and enlightened determination to carry out his duties and prove himself worthy of his exalted position, will animate every graduate of our now legally acknowledged and protected corporation.

THE VETERINARY SURGEONS ACT, 1881.

44 and 45 VICT., CHAPTER 62.

An Act to amend the Law relating to Veterinary Surgeons, 27th August, 1881.

Whereas it is expedient that provision be made to enable persons requiring the aid of a veterinary surgeon for the cure or prevention of diseases in or injuries to horses and other animals, to distinguish between qualified and unqualified practitioners:

Be it therefore enacted by the Queen's most Excellent Majesty by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled and by the authority of the same as follows:

Short Title. 1. This Act may be cited as the Veterinary Surgeons Act 1881.

Interpretation. 2. In this Act—

"The Royal College of Veterinary Surgeons" means the Royal College of Veterinary Surgeons incorporated and regulated by a charter and two supplemental charters granted by Her Majesty in the years 1844, 1876, and 1879 respectively.

"The Registrar" means the Registrar for the time being of the said Royal College.

"Veterinary surgery" means the art and science of veterinary surgery and medicine.

Provisions as to register of veterinary surgeons. 3. (1) The register of members of the Royal College of Veterinary Surgeons directed by her Majesty's said Royal Charter of 1876 to be made and maintained, shall be styled the Register of Veterinary Surgeons, and shall be kept as accurately as possible by the Registrar.

(2) The Council of that College shall cause correct copies of the said register to be from time to time and at least once a year printed under their direction and published and sold, and such copies shall be admissible in evidence.

Provision for examination of students in England, Scotland, and Ireland. 4. The Royal College of Veterinary Surgeons shall be bound to make provision in the manner permitted by their charters for the examination in England of the students attending the Royal Veterinary College, and in Scotland of the students attending the several Scotch Veterinary Colleges, and in Ireland whenever a Veterinary College shall be established in that country, and to admit and register such students as have passed the examination as members of the said Royal College under the provisions of such charters and this Act.

Correction of register. 5. (1) The Registrar shall from time to time insert in the register of Veterinary Surgeons, any alteration which may come to his knowledge in the name or address of any person registered.

(2) The Registrar shall remove from the said register the name of every deceased person.

(3) The Registrar may remove from the said register the name of a person who has ceased to practise, but not (save as hereinafter provided) without the consent of that person.

(4) Where the Registrar has reason to think that any person registered has ceased to practise, the Registrar may send by post to such person a notice inquiring whether or not he has ceased to practise or has changed his residence ; and if the Registrar does not within three months after sending the notice receive any answer thereto from such person, the Registrar may within fourteen days after the expiration of the three months send him by post in a registered letter another notice referring to the first notice, and stating that no answer thereto has been received, and if the Registrar does not within one month after sending the second notice receive any answer thereto, such person shall for the purpose of the present section be deemed to have ceased to practise, and his name may be removed accordingly.

(5) In the execution of his duties the Registrar shall act on such evidence as in each case appears sufficient.

emoval of name from register.

6. The power conferred by the said Supplemental Charter of 1867 on the Council of the said Royal College, at a meeting the Council, at which not less than two-thirds of the members are present, and with the consent of three-fourths of the members so present, but not otherwise, to remove a name from the register of Veterinary Surgeons may be exercised in respect of any person who is at the passing of this Act on that register, or who is after the passing of this Act placed thereon under the said charters or this Act, but in the following cases only (that is to say), at the request or with the consent of the person whose name is to be removed, or where a name has been incorrectly entered, or has been fraudulently entered or procured to be entered, or where a person registered has, either before or after the passing of this Act, and either before or after his registration, been convicted, either in Her Majesty's dominions or elsewhere, of an offence which, if committed in England, would be a misdemeanour or higher offence, or where a person registered is shown to have been guilty, either before or after the passing of this Act, and either before or after his registration, and either in Her Majesty's dominions or elsewhere, of any conduct disgraceful to him in a professional respect.

Restoration of name to register.

7. (1) Where the Council of the said Royal College have removed the name of any person from the register of Veterinary Surgeons, the name of that person shall not be again entered in the register except by a resolution of the Council passed under this section, or by order of a court of competent jurisdiction.

(2) The Council may by resolution passed by a like proportion of their number as is for the time being required for the removal of a name from the said register, direct the Registrar to restore to the register any name removed therefrom, either without fee or on payment of such fee not exceeding the registration fee as the Council from time to time fix, and the Registrar shall restore the same accordingly.

(3) The name of any person removed from the said register at the request of such person or with his consent shall, unless it might if not so removed have been removed by order of the Council, be restored to the register, on his application and on payment of such fee not exceeding the registration fee as the Council from time to time fix.

Proceedings for removal or restoration of name.

8. (1) The Council of the said Royal College shall, for the purpose of exercising in any case the power of removing a name from or of restoring a name to the register of Veterinary Surgeons, ascertain the facts of the case by a committee of the Council, the

powers of the committee being exerciseable by not fewer than three members of the committee; and the report of the committee, after hearing the person concerned, if he so desires, shall be for the purpose aforesaid conclusive as to the facts, but so that the Council shall form their own judgment on the case independently of any opinion of the committee.

(2) If in any case the Council determine to remove the name of any person from the register of Veterinary Surgeons, or not to restore thereto the name of any person, the Council shall, if required by him, state in writing the reason for that determination, and he may appeal to the Privy Council; and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal, or order that Council not to remove the name of the appellant, or to restore his name, as the case may require.

Evidence of registration.

9. A copy of the register of Veterinary Surgeons for the time being purporting to be printed and published in pursuance of this Act shall be evidence in all cases (until the contrary be made to appear) that the persons therein named are on the register of Veterinary Surgeons; and the absence of the name of any person from such copy shall be evidence (until the contrary be made to appear) that such person is not on that register: Provided that in the case of any person whose name does not appear in such copy a certified copy under the hand of the Registrar of the entry of the name of such person in the said register shall be evidence that such person is on the said register.

Notice of death of practitioners.

10. Every registrar of deaths in the United Kingdom on receiving notice of the death of any person on the register of Veterinary Surgeons, shall forthwith transmit by post to the Registrar a certificate under his hand of such death, with the particulars of time and place of death; and on the receipt of such certificate the Registrar shall erase the name of such person from the register of Veterinary Surgeons, and shall transmit to the said registrar of deaths the cost of such certificate and transmission.

Penalty on obtaining registration by false representation.

11. Any person who wilfully procures or attempts to procure himself to be placed on the register of Veterinary Surgeons by making or producing or causing to be made or produced any false or fraudulent declaration certificate or representation either in writing or otherwise, and any person aiding and assisting him therein, shall be deemed guilty in England or in Ireland of a misdemeanour and in Scotland of a crime or offence punishable by fine or imprisonment, and shall on conviction thereof be liable to a fine not exceeding fifty pounds or to be imprisoned with or without hard labour for any term not exceeding twelve months.

Penalty for wilful falsification of register.

12. If the Registrar wilfully makes or causes to be made any falsification in any matter relating to the register of Veterinary Surgeons he shall be deemed guilty of a misdemeanour and shall be liable to a fine not exceeding fifty pounds, or to be imprisoned with or without hard labour for any term not exceeding twelve months.

Registration of colonial or foreign practitioner with recognised diploma.

13. (1) Where a person shows that he holds some recognised veterinary diploma granted to him in a British possession, and either that the grant of such diploma occurred when he was not domiciled in the United Kingdom, or in the course of a period of not less than five years during which he resided out of the United Kingdom, or, if he was practising veterinary surgery in the United Kingdom at the passing of this Act, that he has practised veterinary surgery for not less than ten years, either in the United Kingdom or elsewhere, he shall upon payment of the registration fee be entitled without examination in the United Kingdom to be registered as a colonial practi-

tioner in the register of Veterinary Surgeons and to become to all intents a member of the said Royal College.

(2) Where a person shows that he obtained some recognised veterinary diploma granted in a foreign country, and either that he is not a British subject, or, that if a British subject he has practised veterinary surgery for more than ten years elsewhere than in the United Kingdom, or if he was practising veterinary surgery in the United Kingdom at the passing of this Act for not less than ten years, either in the United Kingdom or elsewhere, and either continues to hold that diploma or has not been deprived thereof for any cause which disqualifies him for being registered under this Act, he shall, on payment of the registration fee, be entitled without examination in the United Kingdom to be registered as a foreign practitioner in the register of Veterinary Surgeons and to become to all intents a member of the said Royal College.

(3) For the purposes of this section a veterinary diploma is any diploma, licence, certificate, or other document granted by any university, college, corporation, or other body in respect of veterinary surgery, and includes a licence or authority to a person to practise veterinary surgery granted by any department of or persons acting under the authority of the Government of the country or place within or without Her Majesty's Dominions wherein the licence or authority is granted ; and a British Possession is any part of Her Majesty's Dominions out of the United Kingdom ; and a recognised veterinary diploma is a veterinary diploma recognised for the time being by the Council of the said Royal College as furnishing a sufficient guaranty of the possession of the requisite knowledge and skill for the efficient practice of veterinary surgery, and as entitling the holder thereof to practise veterinary surgery in the British Possession or foreign country wherein the diploma was granted.

(4) If a person is refused registration as a colonial practitioner, or as a foreign practitioner, the Council of the said Royal College shall, if required by that person, state in writing the reason for that refusal, and if that reason be that the veterinary diploma held or obtained by him is not a recognised veterinary diploma, that person may appeal to the Privy Council, and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal or order that Council to recognise that veterinary diploma.

Confirmation of charters.

14. The said charters of the Royal College of Veterinary Surgeons are hereby confirmed, and are declared to be and shall be in full force and virtue, except as far as the same are by this Act altered, or as the same are inconsistent with this Act, but not so as to prevent the making of any amendment thereof or addition thereto by any supplemental Royal Charter not being inconsistent with this Act.

Title of existing veterinary practitioners to be registered in college.

15. (1) Where at the passing of this Act any person practises and has continuously for not less than five years next before the passing of this Act practised veterinary surgery in the United Kingdom, but is not on the register of Veterinary Surgeons, he shall be entitled, subject to the provisions of this Act, to be placed on a separate register under the heading of "Existing Practitioners," without examination, on such terms as to payment of fees, and as to other matters, as the Council of the said Royal College, with the approval of the Privy Council, direct.

(2) On any person applying for registration under this section within one year after the passing of this Act, and thereupon, or within a reasonable time thereafter, producing to the Council of the said Royal College evidence of his title to registration by statutory declarations of himself and of other persons able to testify on his behalf, or such other evidence as that Council

may reasonably require, he shall be registered under direction of that Council accordingly.

(3) If a person is refused registration under this section the Council of the said Royal College shall, if required by him, state in writing the reason for that refusal, and he may appeal to the Privy Council; and the Privy Council, after communication with the Council of the said Royal College and the appellant, may either dismiss the appeal or order that Council to register the appellant under this section.

(4) No person registered under this section shall be deemed to be a member of the said Royal College within the said charters or this Act.

Penalty on false representation as to membership of college.

16. If after the passing of this Act any person not being a fellow or a member of the Royal College of Veterinary Surgeons takes or uses any name, title, addition, or description, by means of initials or letters placed after his name, or otherwise, stating or implying that he is a fellow or a member of the Royal College of Veterinary Surgeons, he shall be liable to a fine not exceeding twenty pounds.

Penalty on misrepresentation after 1883 as to qualification to practise and in capacity to recover fee, etc.

17. (1) If after the thirty-first day of December one thousand eight hundred and eighty-three any person, other than a person who for the time being is on the register of Veterinary Surgeons, or who at the time of the passing of this Act held the Veterinary Certificate of the Highland and Agricultural Society of Scotland, takes or uses the title of Veterinary Surgeon or Veterinary Practitioner, or any name, title, addition, or description stating that he is a Veterinary Surgeon or a Practitioner of Veterinary Surgery or of any branch thereof, or is specially qualified to practise the same, he shall be liable to a fine not exceeding twenty pounds.

(2) From and after the same day a person other than as in this section mentioned shall not be entitled to recover in any court any fee or charge for performing any veterinary operation, or for giving any veterinary attendance or advice, or for acting in any manner as a Veterinary Surgeon or Veterinary Practitioner, or for practising in any case veterinary surgery, or any branch thereof.

Exercise of powers of Privy Council.

18. (1) All powers vested in the Privy Council by this Act may be exercised by an Order of Council made by two or more of the Lords and others of Her Majesty's Most Honourable Privy Council.

(2) An order made by the Privy Council under this Act may be made conditionally or unconditionally, and may contain such terms and directions as to the Privy Council seem just.

(3) The Council of the said Royal College shall forthwith obey any order of the Privy Council under this Act, and observe and fulfil all conditions, terms, and directions therein contained.

Summary proceedings for fines and imprisonment. 11 and 12 Vict. c. 43. 42 and 43 Vict. c. 49. 27 and 28 Vict. c. 53.

19. Fines and imprisonment under this Act may be recovered and imposed summarily that is to say—

in England in manner provided by the Summary Jurisdiction Act 1848 and the Summary Jurisdiction Act 1879 and any Act amending either of those Acts;

in Scotland before the Sheriff or Sheriff-substitute or two justices in manner provided by the Summary Procedure Act 1864 and any Act amending the same;

in Ireland within the police district of Dublin metropolis in manner directed by the Acts regulating the powers and duties of justices of the peace for such district or of the police of such district, and elsewhere in Ireland before two

or more justices of the peace in manner directed by the Petty Sessions (Ireland) Act 1851 and any Act amending the same.

14 and 15 Vict. c. 93.

A prosecution under this Act may be instituted by the Council of the Royal College of Veterinary Surgeons but shall not be instituted by a private person without the written consent of the said Council.

Saving rights of the Royal Veterinary College.

20. Nothing in this Act shall affect the charter and supplemental charter granted by Her Majesty to the Royal Veterinary College in the years 1875 and 1877 respectively, or any of the property, rights, powers, and privileges of that College thereunder.

THE REGISTER OF VETERINARY SURGEONS.

THE Register of Members and Fellows of the Royal College of Veterinary Surgeons, corrected to September, 1880, is now out of print, and a new issue must be published early next year. It is, therefore, earnestly requested that any change of residence, retirement from practice, deaths, or other information necessary in order that the Register be prepared according to Act of Parliament, may be reported to the Secretary, 10, Red Lion Square, W.C., without delay.

EXCERPTS FROM CONTINENTAL VETERINARY JOURNALS.

BY J. H. STEEL, ARMY VETERINARY DEPARTMENT.

THE recent improvements and suggestions in PRACTICAL SURGERY made by our continental *confrères* next require notice. M. Bouquet, Government Veterinary Surgeon of Roeuly, gives his *New Method of Treatment of Umbilical Hernia by Wooden Clamps.* "In cases of simple umbilical hernia of some size, one of the most simple and efficacious methods of treatment is by the wooden clamps. With the iron clamps we run the risk of dividing the skin and producing fatal protrusion of the bowel. The two divisions of the wooden clamp are maintained in contact by means of an ordinary ligature; to bring them together the operator either uses the fingers or the clamp compressor. To obtain as perfect compression as possible, I have designed pincers and two rings. The two branches of the *pincers* are approximated by a screw moving through one and fixed to the other; a spring is so arranged as to separate the branches when the screw is undone. At the free end of each branch is a large grasping portion, slightly hollowed longitudinally, which allows the instrument to exactly grasp the middle of the clamps and to bring them together as most convenient. A transverse depression at the end, on the free margin of each grasping part, adapts the instrument for ordinary castration. The *rings*, true clamp compressors, have a screw-perforated bezel, through which runs an ordinary thumbscrew. With these I employ the curved wooden clamps, prepared in the usual way, with a groove at each end to retain the ligatures. To operate, I throw the patient on his back, and keep the four limbs in the air by means of the hopple rope passed over a beam or the branch of a tree; then I reduce the hernia as suggested by M. Deneubourg. The intestine having been returned, I take the hernial sac and fold it longitudinally along the middle line; an assistant then takes the ordinary pincers, opened, and passes it, perpendicularly to the belly, on the middle of the fold between the two hands, very near the navel. Whilst he presses on the pincers and greatly stretches the skin, I apply the clamps against the abdominal walls and fix them by means of a second ligature. I then take

my pincers and apply them on the middle of the clamps, and compress as much as possible. I then hand it to an assistant and place one of the rings on each extremity of the clamp, and I turn the screw of each ring in such a manner as to secure even approximation of the two clamps. I then remove my pincers and pass two or three shoeing nails below the clamps to prevent their shifting, and I bend the extremity of each nail. The clamps and contents fall off *en masse* in eight or ten days." (*Ann. de Méd. Vet.*, June, 1881, where are given illustrative plates.)

In a very interesting article, *On the Part played by the Inguinal Ring in Strangulated Hernia of the Horse*, given in the *Recueil de Méd. Vét. Pratique* for 30th January last, M. Palat tries to prove from anatomical and pathological considerations, that in cases of strangulated hernia the compression takes place as Girard, Renault, and D'Arboval supposed, by the margin of the inguinal ring, and not, as M. Bouley has since taught, at the level of the neck of the vaginal sheath. He says: "If in the dead animal we open the scrotum we may assure ourselves of this. The sheath gives the sensation of a narrowness, as of a glove finger, whilst the lips of the ring give that of a band, fibrous cord, or loop." Thus the inguinal ring performs the principal part in strangulation, the neck of the vaginal sheath only acting in a minor, secondary manner. "*Conclusion.*—If we pass a finger along the herniated intestine, we can easily reach as far as the inguinal ring, which seems a very much stretched loop. It is that loop which forms the cord which we must carefully divide by several very small and well regulated nicks if we wish to succeed in our operation for the return of the hernia." (*Ann. de Méd. Vet.*)

Dr. Gelineux suggests as a modification of Allingham's treatment with strong nitric acid dressings for Prolapsus Recti, the use of the perchloride of iron in preference to the stronger caustic. He first dresses the exposed mucous membrane, then passes a plug steeped in the solution into the bowel, and fixes on a compress, also steeped in the solution, by means of a bandage. The injection requires to be several times repeated, and the action of the bowels constantly regulated. Doubtless this method might be beneficially adopted in other forms of prolapsus.

Feser records, in the *Wochenschrift für Thierheilkunde*, his experiments to determine the therapeutic dose of nitrate of strychnia in subcutaneous injection and in draught. He used 1 °/₀ solution (1 gramme of the salt to 100 grammes of distilled water), so that each gramme of the solution represented 1 centigramme or 10 milligrammes of the salt. Thus it was easy to determine the exact amount employed; the dose was decided by the weight of the living animal, whatever its species.

Horse.—Three experiments showed hypodermic dose. Dose by stomach : : 1 : 5. We may inject without fear 1-2 milligrammes of the agent per kilogramme of weight of the animal; 4 milligrammes caused speedy death. Therapeutically, we should always commence with a moderate dose. Thus, to a horse of 500 kilogrammes weight give 25 centigrammes by the mouth, or inject 5 centigrammes; give two doses daily, at six or eight hours' interval (*i.e.*, for horse of average weight, dose *per diem*, about thirteen grs.; subcutaneously, 12 grs.).

Ox.—Results from thirty-five experiments on four animals. Dose, 2 milligrammes per kilogramme of weight. With 1 milligramme no apparent effect; with 3 milligrammes severe symptoms, even fatal with weak subjects. A subcutaneous dose of 1 milligramme may be repeated every two hours, and one of 2 milligrammes every five or six hours, but then its action must be very carefully watched.

Sheep.—Thirty-two experiments. Dose for subcutaneous injection, 1-2 milligrammes per kilogramme; 4 milligrammes causes death. Dose by mouth ten times as great.

Pig.—Subcutaneously: Dose, 2-3 milligrammes per kilogramme of weight, repeated every five or six hours; 6-7 milligrammes causes death. Internally, 4-10 milligrammes may be given; 18-20 milligrammes causes death.

Dog.—Fifty-three experiments. Subcutaneous: Dose, 1 milligramme per kilogramme of weight; 3-4 milligrammes may cause death. By mouth, 5-6 milligrammes in a small piece of meat. A dose of 1 milligramme should not be given more than three times *per diem,* and of 2 milligrammes not more often than twice daily.

Cat.—Twenty-four experiments on eight animals. Dose very nearly the same as for dog: 1 milligramme injected beneath skin produces no appreciable effect, 2 milligrammes acts markedly, and 3 milligrammes generally causes death. This animal can take 2-4 milligrammes by the mouth, but 6 milligrammes causes death.

Young animals are less susceptible to the action of strychnia than adults, herbivora than carnivora. Strychnia is frequently used in dosimetric therapeutics. M. Landrin employs it daily in cases of Paralysis, Typhoid Fever of the horse, dropping after calving, etc. "Combined with arsenic, strychnia proves an excellent means of controlling the circulation and the secretions." He employs the arseniate in doses of half milligramme by the mouth. (*Recueil de Méd. Vét.*, April 30th, 1881.)

ABSTRACT OF SOME EXPERIMENTS WITH REGARD TO THE EFFECTS OF ELECTRICITY ON RABBITS.*

BY DR. H. NOTHNAGEL.

WHEN an electric shock of moderate intensity is passed through a hind limb, *sensibility* is lost from the hock downwards. If the shock be passed from the tail to the fore limb, the tail to that part where the muscle commences, and the fore limb below the carpus, are anæsthetised. Dr. Nothnagel explains this by saying, that the effects of the shock vary with the *diameter* of the part through which it passes; thus in the two preceding cases, the lower parts of the limbs and the end of the tail are the smallest parts through which the shock passed. In order to substantiate this view, he argued that a stronger shock ought to extend the area of insensibility, and this he found to be the case.

The results he found to vary, according to where the current entered and took its exit. Thus, if the *foot* was not included between the electrodes, no insensibility resulted, except at the points of entrance and exit of the shock.

With regard to paralysis, he found it could only be produced when a strong shock was passed from one hind leg to the other. If the shock passed from the tail or sacrum, or from a fore foot to the toes of a hind limb, no paralysis was produced, at least with the strength of current he used.

Neither the loss of sensation nor the paralysis, when produced, lasted more than two or three hours.

He obtained similar results when wounds were made through the skin, so that the electrodes were not in contact with the skin, showing that not only the skin but other tissues were also affected. He also extirpated the tibia without altering the results, thus showing that the bones were not the channel through which the shock passed.

Arago says: "When lightning strikes men or animals arranged in a row,

* Translated from "Virchow's Archiv," vol. 80, part ii., page 327. 1880. By G. A. B.

its effects are most marked and dangerous to those at the ends." This, says Dr. Nothnagel, may, by analogy, explain to some extent the results he obtained. Why did the anæsthesia remain confined to the feet and tail? Why was it absent when the electrodes were placed on the more bulky part of the body? And why was anæsthesia absent when both electrodes were placed above the foot?

Unfortunately we know very little of the conductibility, or *vice versa*, of the different parts of the body; therefore, we cannot apply our knowledge of the physical laws of the passage and distribution of electricity.

The effect is most intense at the points of entrance and exit, and less marked in the intermediate parts; and this appears to vary with the diameter of the parts. Thus the intensity of the mechanical, or other action of an electric stroke, varies in proportion to the transverse section and conductibility of the body through which it passes. If we take the case of the electric stroke entering at the tail and passing out at the side of the body, we see the tail possesses a very small diameter, whereas the body is comparatively large; hence the physiological action will be more marked in the tail than the body, and this is found experimentally to be the case, for the tail alone loses its sensibility.

Dr. Nothnagel accounts for the sudden cessation of the anæsthesia in his experiments from the sudden increase in the diameter of the parts, namely, the commencement of muscles. The same is the case in the feet; for, independent of the bones being bad and the soft structures good conductors, we find the tranverse section is smallest at the feet. Again, whenever the shock increased he found the anæsthesia extended higher up the limb or tail. He explains the fact, that no results are obtained when both electrodes are on the soft textures, by saying, that the electricity diffuses itself in the soft tissues (good conductors); but if stronger shocks are used, the physiological result (paralysis) would be obtained, especially if the surface by which it was introduced were made to cover a broader surface. He also found that at the points of entrance and exit of the shock anæsthesia was present, and when applied directly in the neighbourhood of a large nerve trunk the whole limb was insensible and paralysed.

Conclusions.—With regard to sensibility:—

1. The shock may produce local disturbances of the peripheral sensitive nerves.
2. The degree of extension depends upon the strength of the shock, and also upon the point of its entrance and exit.
3. That after these disturbances the tissues soon return to their normal condition; and, therefore, do not depend upon any anatomical alterations.
4. The localised sensitive effect of shocks simply depend upon the laws of conduction, distribution, and action of electricity on the tissues.

Effects on the motor powers:—

When a shock is passed, the limb is sharply contracted and extended (convulsed), and after a time the whole body is more or less convulsed. The cries of the animal are produced later. This led Dr. Nothnagel to think that they might be due to the strong contractions of the limbs, and not to the pain produced by the shock.

He found that slight shocks did not produce paralysis, and that strong ones were most certain to produce it when passed in certain directions. For instance, if a strong shock was passed in the direction of the nervus ischiadicus of one leg to that of the other, both legs were paralysed; but he never succeeded in producing paralysis when one hind leg and one fore, or the sacrum to the toes, or tail to toes, were included between the poles.

The paralysis, like the anæsthesia, passed away after a short time, the animal regaining motor power even quicker than sensibility.

He is not prepared to say whether the paralysis is due to a functional disturbance of the muscle itself, or to the motor branches of the nerves or their endings. Against the branches of nerves being involved, is the fact that they respond to electric stimulation.

The atrophy which accompanies the paralysis is, in his opinion, due to a direct influence on the muscular substance, although it is possible it may be simply due to rest.

INOCULATION OF MONKEYS WITH TUBERCLE.

SOME interesting experiments have been performed by MM. Krishaber and Dieulafoy, on the artificial production of tubercle in monkeys. Observations on these animals have a special interest on account of their susceptibility to the disease, and on account of their position, in relation to man, in the animal kingdom. Monkeys are commonly believed to be extremely liable to tubercle ; it has even been asserted that all monkeys in confinement die, sooner or later, of this malady. If so, they would be hardly fit subjects for experiment. Krishaber and Dieulafoy have, however, ascertained that this is not correct. They have obtained information on this point from the directors of all the principal zoological gardens in Europe. It would seem that about twenty-two per cent. die tuberculous, which is nearly the same as the percentage of deaths from the disease in man. Sixteen monkeys were subjected to inoculation, and twenty-four others were kept under the same conditions for the purpose of comparison. Those experimented upon were divided into four groups, and each group was inoculated with a different pathological product : grey granulations, pulmonary tissue infiltrated with grey tubercle, and caseous substance. Of the three monkeys constituting the first group, one died with cheesy glands, the other two survived, and one of them resisted two other inoculations. The thirteen other monkeys were divided into three groups, and, with the exception of two which perished accidentally soon after the inoculation, all died from Tuberculosis after an interval which varied from thirty-four to 218 days. The most rapid cases were those of the monkeys inoculated with grey granulations. Of four animals inoculated together, three died after the same interval. If the two monkeys which died from an accident are left out of calculation, eighty-six per cent. of those which were inoculated died tuberculous, while of the twenty-four other monkeys kept for the same time under the same conditions, the deaths from this cause were only five, or 2·1 per cent. The conclusions drawn from these investigations are—(1) That human tubercle, when inoculated, kills a monkey in nine out of ten cases, with lesions analogous to those met with in man. (2) The effect of the inoculation varies according to the substance employed ; the grey granulation is most, and the pulmonary parenchyma least, infectious. (3) Two monkeys only were found to be insusceptible.—*Lancet.*

THE PHYSIOLOGICAL IMPORTANCE OF THE CÆCUM.

DR. ELLENBERGER gives an elaborate paper in the "Archiv fur Wissenschafsliche und practische Thierhielkunde" (B. V. Heft. 6) relating to this subject. He first draws our attention to the opinions of various writers, showing that most of the old authors considered the cæcum to serve as a second stomach, from the fact that they generally found its contents acid. Later, it was found that its secretion resembled that of the small intestines, and was alkaline ; therefore, although the cæcum, from its shape and position, was well adapted for retaining the food, still the theory of its capability for digestion was doubted, and according as authors found its contents acid

or alkaline, so they ascribed its function as similar to the stomach or intestines.

Some have asserted that the process of digestion is at an end after the ingesta has passed through the small intestines ; others that absorption may still go on in the colon ; but they usually restrict this to the fact that the matters were rendered soluble in the small intestines, although they passed into the large before they became absorbed.

Dr. Ellenberger noticed :

1. That all animals which feed upon indigestible food (that containing an excess of cellulose) had a well developed cæcum, or something analogous to it.

2. That the cæcum of the horse, from its size and situation, was well adapted to retain a large quantity of chyme.

3. That the food must necessarily remain in it for some time, and from its vermicular movements undergo a certain amount of churning, etc.

4. The large extent of secreting surface, and the amount of fluid always found in the cæcum served for macerating the food.

5. That more undigested food is found in the ileum than in the colon.

That if these are found correct, it remains to be seen whether

6. The histological construction and condition of its contents go to prove that it is such a good absorption organ as its shape, position, etc., represent.

When comparing the anatomy of the alimentary tract of various animals, Dr. Ellenberger found that those animals, such as carnivora, omnivora, etc., living on easily digestible food, have comparatively large stomachs and small cæcums, while most herbivorous animals either have sacs anterior to the stomach (the compound stomach of ruminants), or other contrivance in the digestive tract, such as large cæcums, etc., to aid the process of digestion.

In the Macroscopical Anatomy, he says the cæcum of the horse develops from the end of the ileum just as the stomach does from the œsophagus. At the fifth week of fœtal life, a pouch is seen to develop in a posterior direction. At about the eleventh week the blind extremity turns itself forwards. The part farthest from the ileum grows faster than that in apposition with it, and in this way the head of the cæcum (Saccus ventriculiformis) is formed. The four ligamentous bands (Ligamenta cæci) grow slowly in length, but faster in width ; whereas the walls of the cæcum itself grow quickly, and thus form the pouches (Cælulæ cæci). About the sixteenth week of fœtal life the cæcum is fully developed in shape and position, but goes on increasing in size with the growth of the fœtus. He further compares the head of the cæcum to the stomach. Thus the dorso-laterally placed convexity (Curvatura magna) may be compared with the large curvature of the stomach, and the ventro-medial curvature (Curvatura parva) with the two openings—one from the ileum, the other into the colon—to the small curvature of the stomach with the œsophageal and pyloric openings.

The walls consist of serous, muscular, and mucous coats. The serous coat is wanting in places, but the muscular is general, and consists of an outer longitudinal coat well developed on the ligamentous bands, and an inner circular running from one band to another, it being very thin directly on the bands. The muscular coat takes a circular direction round the ostium cæco-colicum, and forms a kind of orbicularis (Sphincter cæci), but there is no such arrangement around the ostium ileo-cæcale ; the fibres here approach in all directions, and become attached to a strong ring of connective tissue, so that when the contraction of the muscle occurs it closes the opening.

The mucous coat lies loosely and in folds upon the muscular. The largest

folds radiate in all directions from the small curvature. In the body of the cæcum the folds extend from one ligamentous band to another. At the apex there are no folds ; the mucous coat here lies immediately upon the muscular. The same is the case on the longitudinal bands and the small curvature. At the ostium cæco-colicum this coat forms large circular folds, due to an increased development of the submucosa ; especially is this the case at the anterior (proximal) border of the opening, forming a semi-lunar fold, which projects against the lumen of the colon, and is analogous to the valvula cæco-colica. The fold is, however, so mobile and changeable, that it cannot be said to be a true valve. The ostium ileo-cæcale very much resembles the orificium uteri externum. He was not able to find (by freezing the intestine) a valve in the full-developed animal, although there is, certainly, in the foal a fixed semi-lunar fold of mucosa, which closes the lumen of the ileum, and may be called a valve. In aged animals the muscular ileum projects with its longitudinal folds of mucous membrane into the cæcum.

The blood-vessels, nerves, and lymphatics travel along the two ligamenta mesenterica. From the small curvature of the head they comport themselves similar to those (Arteria coronaria ventriculi sinistra) of the stomach.

The position of the cæcum is obliquely from the right lumbar region postero-superiorly to the ensiform cartilage antero-inferiorly. Both the inlet and outlet are superiorly placed quite near to each other, although the former is somewhat lower than the latter.

From this elementary anatomy we learn that—

1. The cæcum presents a large surface in a small space.
2. Will contain a large quantity of food.
3. The food can remain a long time, and become energetically kneaded before it passes into the colon.

In describing the microscopical anatomy, he says it consists of—1, a Mucosa made up of three layers richly studded with glands ; 2, two layers of muscular ; and 3, the subserous and serous coat.

The mucous coat consists of a (1) *Propria mucosa*, varying in thickness at different parts of the cæcum 0·4—0·55 mm. at apex ; 0·4—0·45 at body; and 0·35—0·4 at the base. 2. The *Muscularis mucosa* 0·04—0·07 mm. thick, and the sub-mucosa. The free surface is covered by a cone-shaped cylindrical epithelium, the base (or broad end) being towards the lumen of the intestine, and when taken from the cæcum of a foal they present a distinctly striated hyaline border (*Saum*). Between these cells there were some semi-lunar, as well as the so-called cup-shaped cells (*Beeherzellen*). This epithelium is placed upon the Propria mucosa proper, which is composed of a fine network of connective tissue, in which the glands, follicles, vessels, and nerves are imbedded. In it we also see connective-tissue corpuscles, leucocytes (*Wanderzellen*), etc., so that it very much resembles lymphatic structure in appearance. Here and there we found round or oval cellular bodies, very much resembling solitary lymph follicles. The follicular glands (Lieberkühn's) extend as unbranched cylinders from the surface of the intestine to the muscularis mucosa. They are 0·4—0·5 mm. long and 0·05—0·06 mm. broad superiorly, and 0·03—0·4 mm. broad inferiorly. They lie very close to each other. About 160-170 were found in a quarter of a millimetre, so that the cæcum contains about 270—300 millions of glands. Each gland is composed of the membrana propria and cylindrical epithelium, the nuclei of which are situated close to the base, and surrounded by granular protoplasm.

The *Muscularis mucosa* is composed of a continuous internal longitudinal and a broken-up external circular layer of non-striated muscular tissue.

The submucosa is composed of loose connective tissue and elastic fibres.

We also noticed here (as in the propria) connective tissue corpuscles, leucocytes and peculiar cell formations (resembling Waldeyer's *Plasmazellen*). These were found in the cæcum of horses, cattle, sheep, goats, pigs, dogs, monkeys, and rabbits. These formations seemed to have no membrane and possessed no fixed form. When isolated, they may be confounded with white-blood corpuscles, but may be distinguished from them by their large size, extremely refracting granular appearance, and large cyst-like nucleus. Dr. Ellenberger treated them with various reagents, and came to the conclusion that they were pyogenic formations of connective tissue.

The submucosa unites the mucosa to the muscular layer, which is composed of an internal circular and an external longitudinal layer, the latter being especially developed on the longitudinal bands.

The subserosa is relatively thick, and the serous coat presents the usual structure.

The blood-vessels pass through the muscular coat into the sub-mucous, and there break up into capillaries. Those supplying the mucosa pass through the muscularis mucosa, and form a fine network around the glands, so that each appears to be imbedded in a network of vessels. Directly beneath the epithelium the branches anastamose, and form a complete capillary net (Rete subepithal). The vessels supplying the muscular coat take the same course as the fibres.

The large valvular lymph-vessels lie in the submucosa, and generally accompany the blood-vessels. The mucous membrane has no lymphatic vessels, but only wall-less spaces. Dr. Ellenberger could not trace the lymphatics, as vessels, beyond the muscularis mucosa, for after his injection-fluids had passed this point they diffused into the meshes of the tissue. Therefore, he concluded, that the mucous membrane only contained wall-less lymph-spaces ; in fact, it is a sponge-like net-work through which the chyle can pass.

From this histological examination, it will be seen that the cæcum is especially favourable to secretion, as is seen from the large superficial glandular surface, and is not unfavourable to absorption, although it does not possess the papillæ, which, as we know, are the chief structures for this purpose in the small intestine.

Dr. Ellenberger then conducted numerous feeding experiments, with known materials, as to quantity and quality, and killed the horses at various times after the last meal, in order to prove, if possible, the part played by the cæcum in digestion. The results of these were, that the contents of the stomach were always acid. In the duodenum they were generally acid, especially at the commencement, sometimes neutral, and even slightly alkaline. The reaction of the contents of the jejunum depended upon the quantity and degree of the acid which passed from the stomach, as well as the rapidity with which the ingesta moved through the duodenum, and, finally, upon the quantity of the alkaline secretion poured into the duodenum. As a rule, they were alkaline, as were the contents of the ileum. The contents of the cæcum were always alkaline, those of the colon varied, the contents of the lowermost portion (nearest the cæcum) were usually alkaline, whilst those of the uppermost portion (nearest the rectum) were acid, as were the contents of the rectum. The changeable reactions are, no doubt, dependent upon the decomposition of the various substances thus : Decomposition of albuminous bodies are alkaline (ammonia), that of fats acid CO_2, and according to the prevalence of one or the other, so is its reaction.

He also examined horses which had died from various diseases, and as far as his experiments went he found there were two principal abnormal reactions—viz., 1. Alkaline reaction of the contents of the stomach, found in horses dying from Pneumonia, Septicæmia, and hepatic hæmorrhage.

2. Acid reaction of the contents of the intestines in cases of Volvulus, intestinal Catarrh, stoppage from collections of fæcal matter (Fæcalstasis). In all cases the contents of the cæcum were neutral, except in those of Volvulus and intestinal Catarrh. It is well known that in the condition of Fever, the acid reaction of the stomach decreases ; therefore, in diseases accompanied with Fever and Septicæmia the formation of acid in the stomach decreases, hence the above results. It is also known that the same results, even to a greater extent, occur in cases of acute Anæmia ; hence the result in hepatic hæmorrhage.

The acid reaction of the contents of the intestines in Volvulus, intestinal Catarrh, etc., is not to be wondered at, since the chyme remains a long time in the canal and decomposition and fermentation processes set in.

In the *resumé* he says that the cæcum of the horse is far more important with regard to digestion, than is that usually ascribed to the colon. All herbivorous animals eat a large quantity of food which contains the easily digestible material (albumen and starch, etc.,) enclosed in an indigestible covering of cellulose, which must be dissolved before the nutritive portion is liberated to come in contact with the secretions of the alimentary canal. In order that this should be done completely, we find several processes, viz., 1, Mechanical mastication and friction ; 2, Maceration in the various secretions. When either of these is imperfectly performed, some of the nutritive material passes through the canal undigested. Since the food of herbivorous animals contains a relatively large quantity of cellulose, on which the secretions have little action, a very small quantity could be digested without some additional means to prepare it, *i.e.*, change it to products which can become absorbed. In ruminants we find such an apparatus in the shape of three extra stomachs, and in birds the crop, etc., which not only serve to soften and triturate the cellulose, so as to set free the nutritive materials which it encloses, but also to change a great portion of the cellulose itself into a soluble material.

Since horses partake of a considerable quantity of cellulose, they must occasionally possess some arrangement, for this coarse digestion. We know the food passes(in solipeds) quickly through the small true digestive stomach, and we found this took place much quicker when fluids were given than when they were withheld. We also know that horses digest the greater part of their food and assimilate most of its nutritive constituents. And since the food passes so quickly through the anterior portion of the canal, there must be some organ where digestion can go on—and we see that horses possess a peculiarly-shaped and situated organ, the *cæcum*. Therefore we may, *a priori*, presume that this organ has some speciality for preparing cellulose for digestion, and may therefore be compared to the stomachs of ruminants and the crop of birds, etc.

The cæcum of the horse is about three times as large as the stomach ; hence its capacity is much greater, both for containing the food and secreting a large quantity of fluid. The food enters the cæcum quicker (from the contraction of the strong muscular walls of the ileum) than it passes into the colon, for the cæcum is so situated that it is unfavourable for expelling its contents. Moreover, its walls are comparatively thin, and its contraction as a rule, weak, so that the food becomes churned up and mingled with the large quantity of secretion which is poured out from the numerous glands lining its surface, until it assumes the fluid condition, in which state the contents of the cæcum are usually found. In order to expel this fluid into the colon, strong contractions are requisite, and these only occur at intervals and when the cæcum is filled.

The fluid found in the cæcum is partly derived from the secretions poured into the small intestines—bile, pancreatic fluids, succus entericus, etc., as

well as the alkaline fluid secreted from cæcum itself, the secretions anterior to the small intestines, and the water taken by the animal. And we believe that the same digestive process goes on in the cæcum as in the small intestines, viz., starch is converted into sugar, albumen into peptones, and fat emulsified.

Dr. Ellenberger says the following are digested in the cæcum :—

1. All matters which have not been allowed sufficient time to undergo the digestive process of the gastric and pancreatic fluids, etc.

2. All those substances which are enclosed in a thick cellulose covering, which must become destroyed either by mechanical means or maceration.

3. All cellulose matters, etc., which are generally considered indigestible (and are very slightly digested by carnivorous animals), become digested by the complicated decomposition processes, churning, and maceration, they receive in the cæcum.

He thinks that the fermentation process is of great assistance to cellulose digestion. That this process does take place is proved by the products found, viz., lactic and butyric acids as fermentation products of carbohydrates ; fatty acids from the decomposition of fat ; leucin tyrosin, etc., as decomposition products of albuminous bodies.

He also thinks absorption must take place in the cæcum, judging from the ample arrangement of lymphatics.

In the summary of his investigations he says :—

1. There is in all animals, which live upon hard digestible food, special facilities for this purpose.

2. The horse belongs to this class, living as he does on food rich in cellulose.

3. In him we find no apparatus anterior to the stomach, and the food passes quickly through it.

4. We find, however, that the cæcum is extraordinarily developed.

5. This seems to answer all the purposes that are required.

(*a*) Its capacity is three times that of the stomach.

(*b*) It is so situated that the food must remain in it for some time, and become mechanically kneaded and moistened ; it is also kept at a certain temperature, so that the decomposition and maceration processes must take place.

(*c*) It has an exceedingly large secreting surface, and its contents are usually fluid.

6. The contents of the cæcum are always alkaline, and contain a number of infusoria.

7. We always find a large amount of gases.

8. Its anatomical structure points rather to a secreting than an absorbing function.

9. The cæcum contains more undigested material than the colon, and less than the ileum.

POPULAR NOTIONS WITH REGARD TO "ROARING."

THE following interesting article on "Roaring" appeared in a recent issue of the *Standard* newspaper :—

One of the favourite topics of conversation and dispute, especially during the Goodwood week, is the supposed degeneracy of the English Thoroughbred. Of the disputants, few probably reflect, even if they know, that the complaint which they either echo or ridicule, according to the side they take up, is at least as old as the commencement of the present century. Sam Chifney, the elder, in the book he published in 1795, found occasion to

allude to "the causes why the Turf horses degenerate," and to the "outcry" of "why are there so few good runners?" and he takes notice of the explanation which then, as now, was offered by the complainants: "Some say they think it is from running horses too young." With this opinion the "Father of Jockeys" did not agree; but he seemed to have no doubt about the fact that even in his day the Thoroughbreds did "degenerate in strength, speed, and beauty." Nevertheless, when he wrote, in 1795, such horses as Beningbrough and Hambletonian were just revealing themselves, and such steeds as Champion, "Waxy" Pope, Whalebone, sire of Sir Hercules, and others were "coming on." Why, one of the most virulent abusers of the modern Thoroughbred has declared that "the English race-horse was perhaps at his best" in the years between 1750 and 1815, which would omit the era of Flying Childers and Bonny Black, and would include the date of the horses whose degeneracy Chifney laments, and of several great horses that Chifney did not live to hear of. The truth is, that all such jeremiads and all such sweeping assertions must be taken with modifications and allowances, based upon our knowledge of the tendency displayed by certain persons, ever since the days of Nestor, to disparage whatever belongs to or is achieved by poor creatures, "such as mortals now are." It stands to reason, moreover, that when the number of horses in training increased to the vast proportions it has now assumed, there would be, on the one hand, fewer instances of a single horse, such as a Flying Childers, or an Eclipse, or a Highflyer, or other paragon, marking an epoch in the history of horseflesh, and, on the other hand, more instances of "weeds" or "wretches," whose multitude and infirmities would become all the more conspicuous from the more frequent opportunities for display, and from the strong light which would be thrown upon their deficiencies by the higher average of excellence. However that may be, there is no doubt that there is one infirmity which prevails among our Thoroughbreds of the present day to an almost alarming extent. That infirmity is "roaring."

Not a season passes but some promising animal, having accomplished wonders at two years of age, is good for nothing, or for nothing but short spins, at three, simply because it has "begun to make a noise," and goes on from bad to worse. Quite recently there was the collapse of Prince Charlie, the "King of the T.Y.C.," and Bal Gal; and yet our breeders persist in breeding from known "roarers." Cantinière, the dam of Bal Gal, was a notoriously bad case. Purchasers, whether in ignorance or not, will give as much as a thousand guineas for a "roarer." This looks as if either the complaint were considered of no great importance, or it were not known to be transmissible from sire or dam. But that the infirmity is generally fatal to a horse's career as a racer over any distance of ground is unquestionable, and that the progeny of a sire or a dam so affected run a very great risk of being similarly afflicted, is hardly less unquestionable. It would seem, then, that persons who deliberately breed from "roarers," whether on the sire's or the dam's side, cannot have at heart the improvement of the English Thoroughbred, and must be actuated by a simple desire to pocket the too many valuable stakes which may be picked up nowadays by unsound "flyers" in short races. On the other hand, it would be expecting a great deal, perhaps too much, to expect the owner of such a horse as Prince Charlie, or the possessor of such a mare as Cantinière, to put the animals beyond the possibility of transmitting their complaint as well as their extraordinary speed. Nay, it is just possible that a confirmed "roarer" may be able to stay; it is a turf tradition that "Shadow could stay any distance roaring like a bull;" but so exceptional a case can scarcely be considered a good reason for trying to perpetuate a class of Thoroughbreds whose performances, at the best, must be both painful to themselves and distressing to their

audience. Whether "roaring" can be cured or not is a question upon which there is no consensus of opinion. It is asserted that at the Cape of Good Hope there is no such thing as a "roarer;" and Brian Boru, said to have been a "bad roarer," when he was exported thither in 1863, is stated to have recovered soon after his arrival, and to have run well there. Another singular instance is that of Brigantine, one of the best of the "Buccaneerids," and it is vouched for by her own trainer. She began well as a two-year-old, but ran badly at the Newmarket July Meeting, immediately after which she was discovered to be "an undoubted roarer." By the end of the next spring the disease had "gradually diminished, and ultimately left her as sound as the day she was foaled," and certainly, the way in which she proceeded to win successively the Oaks and such long-distance races as the Ascot Gold Cup and the Hurstbourne Cup was not indicative of "roaring." Other examples of real or apparent recovery might be quoted; but sceptics shake the head and insinuate that some mistake must have been made, and that the animals were not true "roarers." A tradition which has found its way into the literature of the French Turf, claims the celebrated Eclipse himself as a member of "the band," and, if the claim were substantiated, something might no doubt be urged in favour of breeding "roarers."

What the complaint really is, where the actual seat of it should be sought, and from what causes it arises, seem never to have been clearly ascertained. The late Lord George Bentinck, who was not likely to leave so important and interesting a subject uninvestigated, is said to have handed over to Mr. Field, the most noted of veterinary surgeons, a certain mare, afflicted with "roaring," to be killed, dissected, and subjected to minute autopsy. The surgeon's report was that neither malformation nor disease could be detected in the organs of respiration, and that there was no discernible clue whatever to the mystery. The suddenness with which it comes on is one of its most remarkable characteristics; within a day or two it may be plainly declared, if not fully developed. The opponents of two-year-old racing are fond of tracing some connection between the complaint and the practice of running at a very early age; nor can it be denied that the infirmity has appeared in very many notable instances to have been contracted at the close of a distinguished two-year-old career. But it must be remembered that "roaring" is by no means confined to race-horses; and that hunters, among which there are few, if any, youngsters, have been frequently observed to become "roarers," if, after the hard work of the winter they exchange the hot stable for the cold grass. This gives some plausibility to the supposition that the complaint may be sometimes traced to want of caution in changing the conditions of a horse's life. Horses that have had inflammation of the lungs, or have suffered very much from strangles, are known to be particularly liable to the affection; and a French authority considers that damp climates have not a little to do with it, "since roarers are excessively common in Normandy, and very rare in the South." As for the remedies which have been tried for the complaint, the same French authority mentions one which may be regarded as worse than the disease. It consists in making an incision in the afflicted animal's neck, and inserting a silver tube, called a "rossignol," for the conveyance of air to the lungs. The instrument has been used occasionally in this country, and there may be persons who can testify to the effect produced. But, according to the French evidence, there is no reason to suppose that the animal is much relieved. On the other hand, there is some ground for concluding that the rider and the audience in general, may suffer greater torture, "*car l'air fait un bruit infernal en entrant et sortant de cette mécanique,*" and there is no need to make more "infernal" by artificial means the naturally diabolical noise which such a "roarer," for example, as old Jack o' Lantern or his like would produce with

out the help of artificial tubes. As regards the sort of horses that are disposed to "roar," it has been recorded by a man of experience that large horses are more liable than small to contract the complaint ; but it may be that the saying was suggested by recent impressions due to the size of Prince Charlie. It will be news to many readers to be told that "we certainly have fewer roarers amongst our race-horses than formerly ;" yet that comforting assurance was given more than a year ago, and it may not now be applicable. At any rate, we have quite enough of "roarers," and the number is not likely to diminish as long as they include performers so brilliant, that it would require superhuman self-denial not to breed from them.

THE ROYAL VETERINARY COLLEGE.

WITHIN the past twelve months great changes have been taking place in this school, so far as the teaching staff are concerned, and the old traditions have been abolished to give place to a new *régime*. The appointment of Mr. Robertson—a student of a Northern school—to a professorship was the first breach, and now his accession to the Principalship is the crowning stone in the modernised institution. It has been the invariable custom to allow the Principal of the School to die in harness, but this is changed —no doubt to the benefit of the students, and the comfort and peacefulness of the ex-Principal, who can now end his days in that calm repose which a well-earned retirement deserves, instead of lagging on the stage a tired and worn-out veteran. Of Professor Robertson's fitness for the responsible position in which he is now placed, no one who knows him can entertain a doubt ; and that the school will derive an accession of strength and vitality from the transfusion of northern blood there can be as little doubt. In-and-in breeding of teachers for any length of time, so far as experience in this country goes, is as much to be deprecated as the same practice with regard to animals, and a deviation is as much to be commended in one as the other. While we are certain that Professor Robertson will realise all the anticipations which have been formed with regard to his career as a teacher, we hope that his predecessor may enjoy to the full that retirement which the Governors of the School have allowed him to claim.

Reviews.

AN ESSAY ON THE BREEDING AND MANAGEMENT OF CART HORSES. By R. S. REYNOLDS, M.R.C.V.S., Liverpool.

This essay, reprinted from the second volume of "The English Cart Horse Stud Book," for the author, contains pretty well everything relating to cart horses in the way of breeding and management, and is written in such a concise manner, and in such simple language, that those for whom it is intended should have no difficulty whatever in perfectly understanding it throughout, while to the veterinary surgeon it contains much that is interesting and worthy of attention. Considering the important part the cart horse is made to assume, and the great amount of attention paid to breeding and managing him, as well as the greatly enhanced value he now commands in the market, those most concerned in his welfare cannot know too much about him and his requirements.

The amount of knowledge Mr. Reynolds communicates in his essay, published at half-a-crown, if properly utilised, will tend not only to improve the breeding of this most useful animal, but greatly add to his usefulness and comfort. For this reason the essay is to be recommended to all who are concerned in cart horses.

HORSES AND STABLES. 2nd Edition. By Major-General Sir F. FITZWYGRAM, Bart. (London: Longman, Green and Co.)

A second edition of General Fitzwygram's book having been called for, has given the gallant author an opportunity of adding somewhat largely to the woodcuts, making corrections, and increasing the letterpress to a certain extent. The character and scope of the book is so thoroughly known as well adapted for amateurs, that we have little to note concerning it which would interest the majority of our readers. Some of the chapters—those on stable management, forage, and feeding—are worthy the notice of the younger members of the profession. The references to transmissible diseases, and especially to their causation and prevention, we cannot quite understand; but this may be owing to our lack of perception. Considering the large amount of matter, and the number of cuts, the book is remarkably cheap.

VETERINARY NOTES FOR HORSE-OWNERS. 2nd Edition. By Captain M. H. HAYES. (London: W. Thacker and Co.)

Captain Hayes' Veterinary Notes was an excellent amateur's handbook in the first edition, and in the second it is made still more useful and complete. Though we are entirely opposed to amateur doctoring, as in the majority of cases it is not only futile, but dangerous, inasmuch as the practice of medicine and surgery cannot be taught by books, yet there are occasions when a horseman may, through the absence of a veterinary surgeon, be driven to his wit's end, and when something should be done to save a horse or relieve it from pain. If books can enlighten to any extent as to what should be done in these emergencies, then their utility must be acknowledged, and they have their place. The descriptions and directions in these Notes are as clear and plain as it is possible to make them, and if it be at all likely that the necessary knowledge as to diagnosing and treating diseases can be imparted in this way, we feel sure that they will supply it.

A VETERINARY MANUAL FOR THE USE OF SALOOTRIES AND NATIVE HORSE-OWNERS IN INDIA. By J. J. MEYRICK, M.R.C.V.S., Army Veterinary Inspector.

This is a most praiseworthy and apparently very successful attempt to supply the native farriers and horse-owners of India with a similar, though more detailed, work to that of Captain Hayes, but printed in Hindustani. The labour entailed by such a task must have been very heavy, and Mr. Meyrick must be heartily congratulated, not only on the courage he displayed in commencing it, but also on the manner in which he has carried it out. As has just been remarked with regard to the preceding Notes by Captain Hayes, so far as veterinary knowledge can be conveyed to amateurs by books, the present manual must effect

a large amount of good. Veterinary surgeons in India are lamentably few in number, and likely to be fewer unless some change takes place; consequently, the loss from preventable diseases in that country is alone estimated to exceed six millions of pounds every year. Nothing can be more disgraceful than the neglect which allows such waste, unless it be the treatment to which the Indian Government subjects the officers of the Veterinary Department, nearly every one of whom is disgusted with service in that part of our Empire. Mr. Meyrick has done his best to diminish the loss, suffering, and cruelty prevailing in Hindustan; but so far as recognition is concerned for what would have doubtless obtained for him honourable distinction had he been serving in a foreign army, he is more likely to be ignored, or snubbed and insulted through having his book submitted by the Government of India to some impertinent and ignorant doctor, or still more ignorant and presumptuous civilian hanger-on. However this may be, the author has undoubtedly the satisfaction of having done a good work—probably the first of its kind. He is to be complimented no less on the skill with which he has arranged and dealt with the matter, than on his knowledge of Hindustani.

Proceedings of Veterinary Medical Societies, &c.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE forty-third meeting of this association was held in the Town Hall, Tamworth, on August 12th.

Harry Olver, Esq., F.R.C.V.S., President, in the chair. Present: Messrs. T. Greaves, Manchester; F. Blakeway (treasurer), Stourbridge; H. Cartwright, Wolverhampton; F. W. Wragg, London; Captain Russell, V.P., Grantham; J. Wiggins, V.P., Market Harboro'; Faulkener, Manchester; H. Perrins, Worcester; E. Meek, Walsall; W. Dale, Coventry; A. Over, Rugby; O. Hills, Leamington; E. Hodgkinson, Uttoxeter; W. C. Ison, Atherstone; R. Cole, Hinckley; C. Reynolds, Mansfield; G. Smith, Tunstall; W. Carless, Stafford; R. Trigger, Newcastle-under-Lyne; G. Rossell, H. Blunt, Edward Stanley, Warwick (Secretary). As visitors, on the invitation of the President—A. Taylor, Manchester; Drs. Fausset, Campbell, and Delaney—all of Tamworth; and J. Allman, London.

Letters were received from the following gentlemen regretting their inability to attend the meeting: Professor Robertson, London; Professors Walley and Williams, Edinburgh; Messrs W. C. Barling, L. Tipper, H. Goule, R. Cartwright, W. Saunders, A. Hodgkins, T. Merrick, E. Beddard, H. Collett, G. Pyatt, G. Fleming, and H. M. Stanley, Vice-President.

The Secretary said he had some correspondence with the Lancashire Veterinary Medical Association, and he had issued over 400 circulars soliciting votes for members of Council; the result being the return of Mr. Blakeway, their selected candidate.

Acting as local secretary for the British National Veterinary Congress, which they all knew had been carried to a highly successful issue through the undaunted perseverance of Mr. H. Steele, he was very pleased to thank the members of this association for the liberal response they had made to the circulars calling their attention to the Congress, and which had enabled him

to send Mr. Banham, the treasurer, the sum of £21 9s. 6d., the balance of twenty-one guinea subscriptions, less expenses.

The President and he had considerable correspondence with Mr. Geo. Fleming (who was working day and night) to assist in passing the Veterinary Surgeons Bill, and it had been necessary to memorialise both Houses of Parliament, at very short notice, on account of opposition to the Bill; and although it had passed the Lords, and he believed the second reading in the House of Commons, he feared it was *in statu quo*, owing to the unfortunate and ill-timed opposition of two or three members of the profession.

The President then delivered his inaugural address, which was as follows :—

Gentlemen,—My first duty in assuming the presidential chair of this association, is to thank you for electing me to so dignified a position, and to assure you that I shall spare no efforts in furthering alike the interests of this association and of the honourable profession to which we belong.

A comparatively young member, both of the association and the profession, I cannot hope to preside over you with the same ability and tact as my predecessors, and feel that you have given me a hard task in asking me to follow so distinguished and able a man as my immediate predecessor (Professor Pritchard). You, too, must know this. I therefore crave your assistance and support, not only by attending the meetings, but by joining in the discussion of subjects brought forward ; so that by a candid and outspoken expression of opinion, we may obtain the greatest possible amount of good ourselves, and also do something for the benefit of our fellow-men.

The Midland Counties Veterinary Medical Association is as yet in its infancy, and it is not difficult to trace its progress, and to mark its failures and successes. Since the first meeting held at Derby in 1866, some of the most eminent men, not only of our own, but of the sister profession of human medicine, have addressed it, either by delivering lectures or reading papers at its meetings. For a time everything went well. The members were enthusiastic, the meetings well attended, and much mutual benefit derived. By degrees this happy state of affairs gave way to apathy and neglect, until it was projected to abandon it altogether. This seemed to give us the necessary stimulus ; new members were enrolled ; good meetings became the rule ; visitors were invited to attend, and so learnt its value ; and we now stand in the year of grace 1881, numerically and financially stronger than we have before been, holding an established position which, with your assistance, I trust in the ensuing year to more than maintain, and so promote the interest and well-being of the profession generally, as well as to harmonise and produce greater unity amongst its members.

Turning from our own association to the wider field of the veterinary profession, we cannot but feel how considerable has been the progress made in the past few years. It is now recognised as one of the institutions of the country, and justly so ; for in its hands is placed, to a great extent, one of the principal sources of wealth of the nation, viz., its domestic animals. It seems passing strange that a country so noted for the quality and value of its live stock, should, I believe, be the only one that has not lent some state aid to a profession, the business of whose members is not only to cure the maladies to which those animals are subject, or to alleviate pain, but by scientific research, indomitable perseverance and close study to find out the cause, and so be able to advise as to the best means of prevention, of the many epizoötic and enzoötic diseases, which produce such ravages amongst our flocks and herds, as well as the equine species.

To the stern integrity, tact, and talent of our predecessors is our past progress due. Then let us with daily increasing advantages, help in raising it to its proper and natural position, side by side with the older profession of

human medicine. In my opinion, a gigantic stride in this direction took place last month, by the meeting of the first British National Veterinary Congress in London, the promoters of which must be congratulated on the unqualified success which resulted from their perseverance and pluck in carrying to a successful issue such a great undertaking. The large number of members of the profession who attended its meetings, from all parts of Great Britain and Ireland, as well as our Colonies, was sufficient evidence of the interest taken by the profession in the subjects brought forward for discussion ; and the manner in which those discussions was kept up was a further proof of the utility, nay, I would say the necessity, of such gatherings for a body of professional men, not only to discuss matters of semi-private professional interest, but to step into the wider field of what may be termed Veterinary Politics, as affecting our *status* as a body, our position before the public, and also of the members of the Army Veterinary Department, whose untiring efforts and gallantry in the field have so often been praised and held up to honour by commanding officers, and as persistently disregarded by the higher officials at home. But it also, more than this, brings us as a body (through the press) before the general public ; it brings us, too, in immediate contact with the members of other learned professions, so that by the mutual interchange of thoughts and opinions, general benefit should be derived. Especially is this so with the medical profession, many eminent members of which body I was pleased to see present, and to hear them taking their part in the discussions—more particularly on that subject so interesting to both professions, and so important to the general public, viz., "The influence of disease of the lower animals on the health of man," so ably introduced by Professor Robertson. Here is material enough for both human and veterinary scientists to work upon for almost all time ; and still it has as yet scarcely entered upon its initiatory stage. This subject cannot be fully entered into without drawing largely on Veterinary Pathology, and sooner or later it must be recognised as an all-important section of social science, generally known as public health. This, with other subjects, such as the transmissibility of disease from man to animals and *vice versâ*, the effect on the human frame of taking disease germs, parasites, etc., in animal food, the ingestion of the flesh of animals that have died or been slaughtered whilst suffering from anthracoid or other so-called blood diseases, are matters of paramount and public importance ; and this importance may be better made known through the deliberations in congress of a body of scientific men embracing both professions, than by any other means. And let us hope that it may result in proving to the Government and to the public, the necessity for establishing an Institution, on the lines of the Brown Institution, for the purpose of investigations in comparative pathology, and studying and experimenting upon and into the cause, history, and effect of the diseases more especially affecting the animal world, which are so intimately connected with and have a direct bearing on public health.

Another very important subject as affecting our domestic animals, and also, I fear, the pockets of the agricultural community, and thereby causing a national loss, was introduced by Captain Russell, F.R.C.V.S., in his "Suggestions for effective legislation for the prevention of Contagious Diseases in Animals." How ineffective the Contagious Diseases Animals Act of 1878 is, we most of us have too sad experience ; but I do not myself so much blame the Act, which I think a fairly good one, as the piecemeal way in which it is worked ; when, as is the case in some counties, men totally unacquainted with the rudiments of science or of the diseases of animals, are appointed to carry out this Act, probably with the advice of a chief constable at head-quarters, we cannot wonder at its comparative failure, and that those who have to suffer complain of the restrictions to which they are

subjected for apparently no good purpose. To render the Act effective it must be applied in all counties alike; only duly qualified veterinary surgeons should be appointed as inspectors, and they should have the assistance and advice of sub-committees of practical farmers—one in almost every parish—with an executive committee at the head of affairs. With the appointment of such inspectors, and the assistance of such committees, larger discretionary powers should be given, as all of us who act as inspectors must feel that the special circumstances of some cases require different restrictions and methods to others. Police officers should assist the inspector when necessary, and the question of slaughter in some diseases, especially "Swine Fever" and "Pleuro-pneumonia Epizoötica," should, with general instructions, be left in the hands of the local committee, with the advice of the inspector. As an instance of the bad working of the Act on the county system, the hall in which we now sit is at the junction of two counties: on one side is an infected area; it prohibits the removal of any stock from the large markets into the county—in fact, takes every precaution to prevent the further introduction or spread of the disease (Foot and Mouth). On the other side, with police for inspectors, no precautions are taken; open markets and fairs are held, and all stock may be moved without restriction. With such a state of affairs no Act of Parliament will stamp out Contagious Diseases.

One other subject brought before the Congress, viz., "Cruelty to Animals," appears to me particularly worthy of our attention. The time was when practitioners of the veterinary art were looked upon as the perpetrators of all kinds of cruelty on the subjects which should be the principal object of their care. No doubt, in the days when quackery was rampant, and the so-called heroic style of treatment was the fashion, the charge was too true. Afterwards, with the cry against vivisection, we were numbered (especially the teaching colleges) amongst the guilty ones. This charge against either teachers, practitioners, or students in this country was without foundation, which has since been acknowledged. After such charges, it was refreshing at the Congress to see the representative of "The Society for the Prevention of Cruelty to Animals" standing up and thanking the members of our profession for their assistance to his society in such a good cause, and expressing his opinion that into the hands of the veterinary profession was the happiness and comfort of our domestic animals to a great extent placed. I feel sure that we shall accept this responsibility, and spare no efforts in thus furthering the cause of humanity.

The first "British National Veterinary Congress" will in time to come, no doubt, be looked upon as one of the landmarks of the year 1881; but we had hoped not the only one—the foresight and perseverance of he who may fitly be termed the "leader of the profession," the President of the Royal College of Veterinary Surgeons, George Fleming, had formulated for us a "Veterinary Surgeons Bill," which aimed at giving us the exclusive title of Veterinary Surgeon. As was expected, this was strongly opposed by the unqualified men, and in the House of Lords much had to be conceded to them—it must be admitted much more than we liked—practically making the Bill of little or no value to the present generation. At any rate, it acknowledged our right to the title, recognised our position, and in the future placed the graduates of our colleges on an equal footing with other learned professions. This being the case, the Bill having passed the House of Lords, and the opposition being silenced, we had hoped to have added this to the triumphs of the year, by seeing it passed into law during the present Session of Parliament. But alas! our boasted unity, now that the graduates of the Highland and Agricultural Society have been admitted into our sanctum, appears to be only a myth; for we hear of disunion within our ranks, and

opposition from a few members of our own body ; so that we now have to fear that the half-loaf which was almost within our grasp will be withheld from us. Let us hope not.

The education and training of the veterinary student is a subject which has caused a great amount of interest of late ; and, as the adjourned discussion on Mr. Greaves' paper at our last meeting takes place to-day, I perhaps cannot better conclude this address than by giving my opinion on the subject-matter of the essay, and so open the discussion. I am in the better position for doing this, inasmuch as my opinions in some respects are at variance with those of Mr. Greaves. First, as to education. I entirely differ from those who think that high classical attainments, with University or other degrees, render a man less able or willing to practise the veterinary art, on the grounds that with such teaching he would be above performing many operations which would necessitate his soiling his fingers, and maybe his clothes. On the contrary, I contend that a man with such an education would hold broader views, and feel that honest labour is no disgrace, and that he would be failing in his duty to his client, patient, and profession if he did not in the minutest detail carry out every requirement of the case he had in hand. I am a great advocate for higher education, for I feel that to the want of it is due the non-success of many graduates of the Royal College of Veterinary Surgeons, and the want of appreciation by the public of our profession as a scientific body. Happily, great improvement has taken place in this respect of late years, and I hope it will continue.

Mr. Greaves says, "The apprenticeship system is peculiarly, if not essentially, necessary in the veterinary profession." I would ask how much does the pupil learn in the one year prescribed as necessary by the Council as an apprentice to a veterinary surgeon? I think we should most of us say, to be fairly expert in the use of the pestle and mortar, and, if his master has a forge, to know something of the art of shoeing. Unfortunately for the pupil, I fear there are but few practitioners who take the stereotyped interest in their charge. Either he is a very busy man with no time to spare, or his practice is limited. I think it is unfair to treat all intending students alike. A farmer's son, for instance, is in a very different position to one coming from behind the desk or counter. I hold that the first essential to the detection and treatment of disease is a perfect knowledge of the animal in health. This really practical knowledge is not gained with the majority of veterinary practitioners.

I should prefer the youth who had spent his life amongst stock to the one who had been dispensing for a year. What better pupilage could one have than on a farm? There he would know every habit of the animals in health, would be able to ride and drive, pick up a horse's foot, put on or take off a shoe, give a bolus or drink, be experienced in lameness, and many of the ailments to which animals are subject, know how to apply most external applications, be a practised obstetrist, an experienced castrator, be able to bleed ; in fact, perform most simple operations. With his college tuition, and some practice between the sessions, such a man should be qualified to perform the ordinary duties of his calling. I admit that a pupilage would assist him still further ; but is it fair that he should be placed on the same footing as a clerk, and be compelled to go to the extra expense which an apprenticeship incurs? For these reasons I would prefer that each student be submitted to an examination before entering on his college career, as a test of his knowledge of domestic animals in health, their habits and peculiarities, and the rudiments of veterinary surgery.

Whatever may be our individual opinions on this and kindred subjects as affecting our profession, I personally am satisfied to leave them to the collective wisdom of the Council of the Royal College of Veterinary

Surgeons, of which body Mr. Greaves is so indefatigable and distinguished a member. We have much to thank them for, and to congratulate ourselves on, in looking at the great progress made in the last few years. We must still keep pace with the times, and the discussions which take place at these meetings must greatly strengthen the hands of the Council as to the opinions held by the rank and file of the profession. Much as they have done and still are doing to elevate and improve our calling, I feel that we must still say with Goldsmith—

> "How small of all that human hearts endure,
> That part which laws or kings can cause or cure;
> Still to ourselves in every place consigned,
> Our own felicity we make or find."

Since our last meeting at Leicester, the Veterinary Surgeons Bill has, as you know, been making progress through the Houses of Parliament. At the call of Mr. Fleming, your secretary (Mr. Stanley) and myself have drawn up and presented, at a day's notice, petitions to both Houses in favour of the Bill, and have signed them on behalf of the Association. There was no time on either occasion to call a special meeting; so that I trust our action in this matter will meet with your approval.

Mr. Stanley, too, has taken an active part as local secretary to the Congress, and I am pleased to be able to report that the Midland Counties sent a goodly number of subscriptions, as well as attendants at its meetings.

I hope that these disjointed remarks will be of sufficient interest to cause a lively discussion. I thank you for your attendance here to-day, as I feel that you are doing me especial honour in visiting the town of my adoption, and I trust that this may be the beginning of another prosperous year for the Midland Counties Veterinary Association.

Mr. ALLMAN said he thought the President's address a very good one, and would compare favourably with those of other learned associations, and he congratulated him upon it. (Applause.)

The PRESIDENT then called on Mr. E. Stanley to begin the discussion on Mr. Greaves' paper on the Penal Clause and Pupilage or Apprenticeship, read before them at its last meeting.

Mr. STANLEY said: I am in favour of Mr. Greaves' view of these subjects. We have a right to claim Penal Protection, or of what use is it spending time and money to obtain our title? We see around us uneducated men living as farriers, because they have practical tact in their business, learnt only in the hard school of experience, and too often erroneously learned from want of science as schoolmaster. Yet the public employ them, and are willing to do so. If we want an assistant we ask, "Where have you acquired your experience?" and judge accordingly whether he is likely to be of use to us or not. If out of good nature we take a newly-qualified man, who has never seen practice, and watch the successive blunders he commits, we wonder how he gained the diploma of the Royal College of Veterinary Surgeons. Hence the importance of pupilage to gain practical tact, which must go hand in hand with science to make a successful practitioner. We should be fortunate indeed if we could get as a pupil such a farmer's son as described by our worthy President; he is nearly a farrier to begin with (hear, hear); he could not have given a better example in favour of a practical foundation to build upon. The public appreciate the practical man, but they fail to see the value of a scientific man without the practical knowledge of his business. There is a case in point now occupying the attention of the Government, namely, Cooper's Hill College, for the training of engineers, one of the most important scientific schools in the kingdom. It is about to undergo some important changes in its system, because its men, who are acknowledged to

receive a most complete scientific education, have failed in India, and why? Because they had not combined a practical knowledge with their scientific attainments. I hope the time is not far distant when the Government will take a similar interest in the veterinary schools.

Mr. Greaves gives the veterinary professors a deservedly hard hit for their opposition to apprenticeship before the student enters college. They of all men must know a veterinary surgeon cannot be made by books and lectures. If we can get Government aid, so that the salaries may tempt successful practitioners to become professors (instead of the present arrangement, which, to my mind, appears wrong, for the professors to be self-elected, and the student of to-day become a professor to-morrow, on a salary not equal to that of a practitioner's assistant), their views would change, to the benefit of the profession and the public. I hope the time will soon come when the professors will insist on the candidates for admission giving proof of having served a pupilage by practical tests (hear, hear), and I advocate a three years' apprenticeship; two before entering college, the remaining time to be completed between the sessions.

The examiners are mainly responsible for the practical knowledge of the student, and I hope we shall soon see that important Board composed only of veterinary surgeons (hear, hear)—men who have proved themselves, by their public career, qualified for so important a trust: and if they were elected every three or five years it would excite a spirit of emulation amongst practitioners to improve their scientific knowledge, which would tend to the advancement of the profession, and so keep pace with the sister sciences (hear, hear, and applause).

I feel personally indebted to Mr. Greaves for bringing the subject so prominently before our Association, and am very pleased to see, by the journals before the profession, that it will not be lost sight of; and must tend to promote the general good.

Mr. GREAVES said he had listened to the President's address with as much pleasure as to any address he had ever heard. His paper was before the profession, and he felt sure all had read it, and hoped all present would freely express their opinions on the subject of pupilage and education, and, before the meeting closed, vote for or against it.

Capt. RUSSELL said since he had been in practice he had found the great necessity for practical experience. They talked of putting down quacks, but how was it possible to do so when there were so many of those who had obtained the diploma of the College going about the country and practically knew nothing? They should get the College to consider the best time to acquire the practical knowledge, and to test the candidates before giving veterinary honours. If only one year of pupilage, he thought it would be best between the College courses. A three years' apprenticeship would be for the public good, and they would soon find out the "vets." who pushed their pupils forward, and so select them as teachers.

Mr. PERRINS agreed with Mr. Greaves that the practice of the art must be studied, and if the Veterinary Surgeons Bill passed, we should have to convince the public that we are practical, especially the young members, so that they may have confidence in themselves, and show manipulative dexterity amongst their patients. His previous knowledge of animals in a state of health he found greatly assisted him in following Prof. Simonds through his lectures when he was a student, and he was convinced a practical knowledge was most essential to raise the profession in the estimate of the public.

Mr. A. TAYLOR said he was decidedly of opinion that all intending veterinary surgeons should, prior to receiving a diploma at the hands of the examiners, be submitted to a much more severe practical examination than had hitherto been the case.

Mr. BLAKEWAY favoured a higher education; and he should like the matriculation examination much more severe than at present, and to be the same in all the schools. He had great pleasure, at the Council meeting, in voting for the one year's compulsory pupilage. He was thankful for small beginnings; he would have liked two or even three years better. It was impossible for the student to gain practical knowledge at the College, and it was not right for examiners to sign the certificate of a young man, and send him forth to the public to gain his practical knowledge at the expense of his patients and his clients. Practical knowledge must be learned by the aid of practical men, and the only practical way of getting it was by a system of pupilage. (Hear, hear, and applause.)

Mr. H. CARTWRIGHT said it was impossible for a young man to gain practical knowledge at the College, and it could only be done by two or three years' pupilage—one year was not sufficient.

Mr. WRAGG strongly upheld the penal Act, and took a very liberal view of the fifteenth clause of the Bill. He derided opposition to the Bill on the ground that it was advisable to admit even two thousand unqualified practitioners if, by so doing, we should exclude forty thousand in time to come. (Applause.)

Mr. TRIGGER agreed with Mr. Greaves. He said very many lamentable mistakes were made by men who had seen no practice, and that an examination to test practical attainments was advisable before pupils entered a college. He strongly supported the three years' system of pupilage.

Mr. W. CARLESS strongly advocated three years' pupilage.

Mr. SMITH said, if the qualified men wished to put down quacks, they must show the public that they can do better than these. (Hear, hear.)

Mr. ISON advocated nothing less than three years' apprenticeship, and was in favour of the 15th Clause in the Bill, and warmly supported the measure.

Mr. FAULKNER advised pupilage before college. The practitioner, in his own interest, was sure to watch over him and correct mistakes, and so insure his gaining practical knowledge.

The PRESIDENT replied to the discussion. He thought practical knowledge was necessary for the student; he would not limit the means of acquiring that knowledge. Let the examiners prove that they had it, then practically deficient men could not enter the profession.

Mr. GREAVES said every speaker had supported his views as to pupilage education, and he found the weight of agreement was in favour of the practical instruction of the student before he went to college. He thought a registration fee of five guineas sufficient, as there were many men now doing a little doctoring who would not care to have their attainments or characters inquired into; and if the Bill now before Parliament was passed, he believed that in 1883 there would be no quacks left in the field. He thought it a most lamentable thing for any one to oppose the Bill. He was sorry to say petitions against it had been sent to the Government by men who ought to have an equal interest in its success.

A vote was then taken at the request of Mr. Greaves, and all the members present were in favour of the pupilage or apprenticeship system outlined by him in his paper.

Mr. ALLMAN exhibited and explained his Nasal Insufflator for curing diseases, such as Catarrh, Nasal Gleet, etc., especially advocating the value of Iodoform Co. Dr. Campbell had found it a wonderful remedy for Ulcers, especially in the human nasal cavities; it required diluting with starch, as its first action was very painful.

Captain RUSSELL suggested improvements in the shape of the insufflator, and spoke of the value of iodoform in sluggish ulcers.

The PRESIDENT announced, as proposed by Mr. E. STANLEY and seconded by Mr. CARTWRIGHT, that the next meeting would be held in Birmingham, and that Mr. Fleming, President of the Royal College of Veterinary Surgeons, had promised a paper on "Laryngisimus paralytica (Roaring)."

On the motion of the PRESIDENT, seconded by Mr. CARTWRIGHT, Mr. Greaves was accorded a very warm vote of thanks for his valuable paper.

On the motion of Mr. GREAVES, seconded by Mr. BLAKEWAY, the President was thanked for his able address and the admirable manner in which he had conducted the meeting.

The President exhibited an extraordinary specimen of Hydrocephalus.

EDWARD STANLEY, F.R.C.V.S., *Secretary.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE sixty-eighth quarterly meeting of this association was held at the Medical Institute, Hope Street, on Monday evening, August 15th, 1881, the President, C. W. Elam, Esq., in the chair. There were present, Professors Lewis, Edinburgh, and H. Hill, Wolverhampton; Messrs. Reynolds, Morgan, Welsby, junr., Jackson, Hobbs, Pilkington, Bell, Moore, Kitchin, Bain, Harrison, Morris, Donald, and the Secretary, of Liverpool; Messrs. P. Taylor, W. A. Taylor, Locke, A. Lawson, Hopkin, Dacre, Faulkner, Greaves, and Wolstenholme, of Manchester; Barnes, Malpas; N. Barron, Cheshire; A. H. Darwell, Northwich; Woods, Wigan; Blakeway, Stourbridge; Roberts, Oswestry; R. C. Edwards, Chester; Lyman, Boston, U.S.A., and several other gentlemen whose names did not transpire. Letters regretting their inability to attend were received from Professor Walley, Messrs. G. Fleming, T. D. Broad, L. Butters, S. Buckley. G. Cave, W. Carless, W. A. Cartwright, B. Cartledge, J. Carter, W. Dobie, B. Duff, J. Ellis, J. Freeman, J. H. Ferguson, J. Kenny, J. Leather, W. K. Lewis, J. E. Lloyd, J. Lawson, J. Litt, J. Moore, J. S. Menzies, C. Middlehurst, T. Procter, A. Prescot, J. Storrar, T. Stone, Tom Taylor, and C. Stephenson.

D. Webster, of Ormskirk, and A. Bain, of Liverpool, were unanimously elected members of this association. Mr. R. S. Reynolds nominated W. A. Taylor, of Manchester, for election as a member of the association.

Professor AXE then delivered a lecture on Cerebro-Spinal Meningitis, which was very attentively listened to. He described it as a disease which had recently appeared in this country, the first cases coming under his notice in April last in a stud of horses in Essex, and a subsequent outbreak in a stock of horses in London. He dealt at some length with some of the causes which he thought tended to produce this malady—such as pasturing on damp, marshy lands, and eating certain kinds of grasses. In the cases which had come under his notice, he had taken particular care to examine the food, water, drainage, etc., but had failed to detect anything which he could connect with the disease. Some of those that were stricken with the malady were working horses, and were fed on wholesome food, which, although changed after the first case was noticed, did not prevent the spread of the disease. Colts that were at pasture on the same farm were affected in a similar manner. He noticed that the majority of cases, in fact nearly all, that came under his notice, were mares, which he thinks suggests a susceptibility in mares. The stables in which his cases occurred were in good order. In one case blood-letting was resorted to, the man being ordered to take the blood some distance from the stable; it was, however, thrown down in a corner without being buried, and next morning a dog was noticed to be paralysed. Sparrows also suffered in the same way, which gave rise to the question: Did the blood cause the malady?

Blood was taken from diseased animals and injected into healthy ones, but no result followed—no paralysis. Mr. Daniels, who had a number of cases of this kind, had also proved the same. Professor Axe thought it resembled the disease called "Kumree," which occurred in India during the prevalence of cold winds in the autumnal periods. It was presumed to be epizoötic in character, and appeared to be prevalent in Ireland. Professor Robertson had said that it arose from eating rank grasses. The disease is sudden in attack, with paralysis ; occasionally the legs will only cross, and the toes trip during progression for a day or two ; ultimately complete paralysis supervenes. In some cases there are no premonitory signs, but the horses are suddenly stricken, and the lungs becoming implicated, there is collapse of the system. In other cases the muscles are in a state of tonic spasm, which may remain persistent as though suffering from Tetanus. There is also a good deal of excitement and irritability ; the eyes stare, there are spasms of the muscles, afterwards stupor, and the lips lose their prehensile power, the food being seized after the manner of a dog ; it is also noticed in drinking, the head being inserted in the pail nearly up to the eyes ; in other cases animals may lose all consciousness.

In some cases he had examined after death, he found about ten or twelve ounces of arachnoid fluid, and the pia mater of a brick-red hue and engorged, the brain showing a similar condition, with some staining of serosity with which it was infiltrated, and no softening. These he found to be the most prominent symptoms.

In the discussion which followed, Mr. DACRE related a case in an outbreak in horned stock. The animal was milking heavily, with a wild and excited look ; pulse 80, temp. 102·4° ; grinding of teeth, no insensibility, nothing to show pressure on the brain. The food consisted of chopped hay, Indian meal, and cotton cake. The *post-mortem* examination showed engorgement of blood-vessels of the dura mater and pia mater ; there was also a little more fluid in the spinal cord than usual ; the substance of the brain and spinal cord was normal ; the third stomach was inflamed.

Professor W. HILL thought Mr. Dacre's cases were Hysteria, and not Cerebro-Spinal Meningitis ; he had five cases, and has ascribed them to eating a large quantity of Indian corn and bad hay. His treatment has been six drachm doses of Potass. Iodid. and ten minims of Aconite tinct. twice daily, and the spine dressed with Ung. Hydr. Biniodide.

Mr. P. TAYLOR thought it was like the Horse-disease in America in 1871, and that it was due to some vegetable poison which acted on the circulatory system.

Mr. GREAVES related an instance that came under his notice where a number of horses that were attacked were prostrate, and some died. He considered it was due to something in the hay, it being cut at a particular stage of its growth. His treatment was an entire change of food.

Mr. LYMAN, U.S.A., had seen a great number of cases in America in the spring of the year. He did not think that either food or water, high or low ground, had anything to do with it. Some had put it down to atmospheric influences, which he had not much faith in. The symptoms were very variable, from slight paralysis to complete coma. He had noticed that more mares were attacked than horses, but a greater percentage of mares recovered ; geldings were almost certain to die. He treated them with physic, Belladonna, etc. He objected to slinging, as he thought it fretted them.

Mr. HOPKIN had had a number of cases similar to those of Professor Axe, but was at a loss how to account for them. He had changed the food ; he had read that the spores on oats had produced the same symptoms, such as ergotising of rye. He found that if the cases were slung they got better, but if they got down they died.

Mr. REYNOLDS had observed that autumn rye-grass in certain seasons became ergotised, and produced the same symptoms.

Mr. WOLSTENHOLME thought that ergot poisoning did not produce cerebral symptoms.

Mr. W. A. TAYLOR had had three cases presenting symptoms such as those described by Professor Axe. In his cases the hay given was bad, but the water was good. There was stertorous breathing. He had given stimulants, and applied mustard and water over the spine.

Mr. FAULKNER would warn members against mistaking Cerebro-spinal Meningitis for Azoturia, and after some remarks from Mr. BLAKEWAY,

Professor AXE replied. He said he had treated with aperients, slings, and quietude; had stimulated the spine with blisters and resorted to Potass. Iodid. and Nux Vomica. He found that the temperature in all cases of duration kept the normal standard, except through bed sores or constitutional disturbance, and then it would rise one degree. They are not of a febrile character, the duration of the disease being from forty-eight hours to several weeks. It was a very obscure disease.

After some remarks from the PRESIDENT, Mr. MORGAN proposed, and Mr. A. LAWSON seconded, a vote of thanks to Professor Axe for so kindly coming amongst them. This was carried by acclamation.

Professor AXE returned thanks, and a similar compliment having been accorded the President, the members adjourned to the Washington Hotel, where the President had kindly provided dinner.

WM. LEATHER, *Hon. Sec.*

Jurisprudence.

BREACH OF WARRANTY.

NEWCASTLE-ON-TYNE COUNTY COURT.

IN August last, Judge Bradshaw delivered judgment in an action for breach of warranty, tried a few days previously, and which may not be without interest to the members of the veterinary profession. His Honour said:—"I reserved my judgment in this case for further consideration, not that I ever had any doubt as to what my decision must be; but because the principle involved undoubtedly has an importance extending far beyond the present case—for it affects the sale of many hundreds of horses in the course of the year in Newcastle alone; and also because I wished to see if I could find any authority for Mr. Joel's proposition that a representation in the catalogue of sale by auction—a description of a horse in such a catalogue—if read out by the auctioneer at the time of the sale, constitutes a warranty of the horse in respect of the matters therein represented or described. The facts, so far as they are material, are simple enough. The plaintiff sent a horse to Messrs. King and Gillespie's establishment for sale in the usual way at one of their regular auctions. The sale was held on the 25th June last. The auctioneer was Mr. John Riddell. The horse was numbered in the catalogue of sale, Lot 22. The conditions of sale and the catalogue were put in. Lot 22 is thus described: 'Cream-coloured cob, seven years old, about 14·2 hands high; quiet to ride and drive, up to a heavy weight. Subject to V.S. examination prior to sale.' Lot 22 was knocked down to the defendant, who gave a cheque for the price, and removed the cob. The cheque was stopped before payment, and the cob was returned to Messrs. Gillespie's yard on the second day after the sale, on the ground that it did not answer the warranty given at the time of the sale, the defendant alleging as the breach, that it

was not 'quiet to ride and drive,' nor was it 'seven years old.' In the result an action was commenced in the Newcastle District Registry of the High Court of Justice, for the price of the cob, £24 3s. The action was sent down to be tried be ore me, with the writ, without pleadings. In the course of the trial, Mr. Joel withdrew his defence, so far as related to 'quiet to ride and drive,' and took his stand upon 'seven years old.' He contended that these words, which the auctioneer admitted he had read out from the catalogue at the time of putting up the lot for sale, constituted a warranty that the horse was seven years old. He called, in support of his contention, Mr. Elphick and Mr. Hunter, veterinary surgeons of experience and repute, who both positively swore, from an examination of the cob's mouth, that it was more than fifteen years old. On the other hand, the plaintiff swore that, to the best of his belief, the cob was seven years old. He stated that he had bought it of one Graham, a horse-dealer, who did not warrant it, but who told him, *inter alia*, that he believed it was seven years old. Graham was called and confirmed this. Both Graham and the plaintiff swore that it was very difficult, if not impossible, to form a positive opinion of a horse's age after six, or at most, eight years old, from an examination of its mouth ; and I confess that the contrary opinions, sworn to by Messrs. Elphick and Hunter, very much surprised me. This evidence would, of course, be very material if we were dealing with an admitted warranty. But though it seemed necessary to refer to it in order to make the facts intelligible, it is not really before me. In my view of the case there is a preliminary question to be solved. Is an allegation in a catalogue of sale by auction that a horse is seven years old, a warranty of that fact by the seller, or is it mere description or representation? Now, it is well settled that every statement as to soundness or other qualities which the seller of a horse may make at the time of the sale in the course of his dealing, and before the bargain is completed, is a warranty, if it appears to have been so intended. That was the law laid down in the leading case of Pasley *v.* Freeman (2 Smith, L.C., p. 72), and it is the law now. Mr. Justice Buller there said :—'It was rightly held by Holt, C.J., and has been uniformly adopted ever since, that an affirmation at the time of a sale is a warranty, provided it appear in evidence to have been so intended.' And it has been held that whether or not a warranty be intended, is a fact to be determined by the jury, upon consideration of all the circumstances. In Budd *v.* Fairmanner (8 Bingham, p. 48) the receipt was in the following words :—'Received £10 for a four-years-old colt, warranted sound in every respect.' It was held that the warranty was restricted to soundness, the age being mere matter of representation or description. Tindal, C.J., there says :—'A party who makes a simple representation stands in a very different situation from one who gives a warranty. For such a representation he will not be answerable unless it be shown to be false within his knowledge.' No doubt it would be more prudent in cases of this kind, where it is difficult, or even impossible, to arrive at certain conclusions, to describe a horse generally as 'aged' instead of particularising his age ; and it seems strange that so shrewd a class of persons as horse-dealers are supposed to be do not act upon this. But that they do not do so is obvious from a cursory inspection of this particular catalogue, in which, out of forty-two lots of horses for sale, no less than eleven horses are described as seven, or eight, or nine years old. But it may be said that Pasley *v.* Freeman, and Budd *v.* Fairmanner are purely common law cases, decided before the Judicature Acts, which give a contractor the benefit of any equitable doctrine in his favour. But *caveat emptor* is as much a rule of equity as of law. In Snell's 'Principles of Equity,' p. 387, the learned author, speaking of the relief given by courts of equity for misrepresentation, says :— The misrepresentation must not only be in something material, but it must be

something in which the one party places a known trust or confidence in the other. It must not be a mere matter of opinion, equally open to both parties for examination and inquiry, where neither party is presumed to trust the other, but to rely on his own judgment. But if the purchaser, choosing to judge for himself, does not avail himself of the knowledge, or means of knowledge, open to him or his agents, he cannot be heard to say that he was deceived by the vendor's misrepresentations, for the rule is *caveat emptor*. Now I am of opinion that in the present case there was no intentional misrepresentation. I think the plaintiff believed, and that he had reasonable grounds for his belief, that the horse was seven years old. I am further of opinion that the words 'Subject to V. S. examination prior to sale,' were intended to enable the purchaser, and did enable him, to avail himself of skilled professional assistance, if he had thought fit to do so. He seems to have chosen to judge for himself. He cannot therefore now be heard to say he was deceived, even in a court of equity. Speaking generally, I have been unable to find any direct authority for the proposition that a description of a horse, his age, or qualities, in a catalogue of sale by auction, even though such description be read out by the auctioneer at the time of the sale, is a warranty of the thing or quality so described; and I am unable to deduce such a proposition from the cases. In the catalogue of sale before me I observe that Lot 7 speaks of a bay gelding, 'Turko,' his height, his qualities as a charger, a hack, a hunter, and otherwise, and then adds 'warranted sound.' Lots 14, 26, 27, and 28, *mutatis mutandis*, are to the same effect, and all have the words added 'warranted sound.' Referring to these lots, I asked Mr. Joel whether he would say that the qualities enumerated, other than soundness, were warranted. And he argued that they were so, and that soundness was specially warranted. I cannot agree with him in that opinion. I find as a fact that the parties did not so intend. This would be sufficient, in my opinion, to give the plaintiff a verdict. But beyond this, I think that the matter is concluded by the conditions of sale. The sixth condition has these words: 'No warranty to be implied from price or otherwise, or held as granted, unless expressly agreed to in cases of sale by private contract, or announced by the auctioneer from the box in sales by auction.' It is in evidence that no such announcement was made by the auctioneer on the sale of Lot 22. My judgment, therefore, is for the plaintiff. I have given my reasons at greater length than was perhaps necessary to determine the question immediately before me, because the interests of so many persons are affected by it."

Army Veterinary Department.

War Office, September 13th.

VETERINARY DEPARTMENT.—Veterinary Surgeons on probation, J. H. Steel, E. H. Kelly, and E. E. Bennett, to be Veterinary Surgeons.

The following pertinent article appeared in the *Army and Navy Gazette* for September 24th:—

"The condition of the Indian Veterinary Department appears to be, in every sense of the word, deplorable, and unless it is remedied, the consequences must be serious for that portion of our empire. So unjustly and cruelly have veterinary surgeons been treated by the Indian Government, that in a short time it is probable very few will remain in the country. The number of applications to return to England has never, we believe, been so large, and the best men are those who are most anxious to leave a country

in which, do as they may, they are invariably subjected to incivility, insult, and discouragement of every kind. The greatest difficulty is experienced in getting veterinary officers to leave England for a term of Indian service, and though large sums are offered for exchanges, substitutes can scarcely be procured. With regard to this department, the Indian authorities appear to be acting in the most unaccountable manner, and in a way calculated to dishearten and degrade it to the very lowest condition possible. A short time ago, we called attention to the discreditable conduct of Surgeon-General J. M. Cuningham, in his criticisms on a report made by Inspecting-Veterinary-Surgeon G. Evans, with regard to an obscure disease among horses. The fact that such a report should be submitted to a person who was obviously not in a position to deal with it, to say nothing of the presumption and bad taste of that person in undertaking to criticise it, did not reflect any credit on the authorities, but, on the contrary, exposed them to serious strictures for their want of judgment and tact. They have now further aggravated the offence they then committed, by allowing to be published in the Military Department in July another criticism by a Mr. Paul Knight, late editor of the *Indian Agriculturist*, on Mr. Evans's report. Anything more objectionable than the conduct of the Government in this business cannot be conceived. Mr. Knight's critique is nothing but a tissue of nonsense, and he himself confesses that he knows nothing of the subject he ventures—without, evidently, any kind of medical knowledge—to give an opinion upon. This absence of knowledge, however, does not prevent him forwarding a preparation which will cure animals suffering in any stage of the malady, the nature of which, be it remembered, Mr. Knight admits is not known. Here, then, we have the Indian Government not only insulting and degrading the Veterinary Department, by asking for and publishing the opinions of incompetent amateurs on a subject strictly professional, but also directly encouraging undisguised quackery in the grossest form, in the treatment of disease. Can we be surprised that the losses among animals every year represent many millions of pounds, which are entirely thrown away, that the campaigns in Afghanistan were a heavy disgrace to us, so far as the mismanagement of and cruelty to animals are concerned, and that no veterinary surgeon who can leave India will serve in it, for love or money? We wonder how much longer such a state of affairs will be tolerated by the Imperial Government."

Obituary.

THE death is reported of W. E. Harrison, M.R.C.V.S., of Boroughbridge, Yorkshire, who graduated in 1868.

Also of J. S. Cusack, of Cashel, Ireland, who graduated in 1876; J. Baxter, of Port William, N.B., a graduate of 1836; and J. Corbett, junr., of Newcastle-on-Tyne, who graduated in 1874.

Germany has sustained a heavy loss in the demise of Dr. C. H. Hertwig, an ex-professor of the Berlin Veterinary School, and an Honorary Fellow of the Royal College of Veterinary Surgeons, who has had a most distinguished career in human and veterinary medicine—especially the latter. Born at Ohlau, in Silesia, in 1798, Hertwig was educated at the Gymnasium of Brieg. Passing there with honours, he studied medicine and surgery at the Breslau University, and subsequently veterinary medicine at Vienna and Munich. After graduating he made a scientific tour through Switzerland, France, Holland, and England. In 1823 he took the post of "Repetitor" at the Berlin Veterinary School, and in 1826 received the degree of M.D. from

the University of that city, his thesis for the doctorate being entitled "*Experimenta quædam de effectibus læsionum in partibus encephali et de vevosimile harum partium functione.*" In 1833 he became professor, and soon after he was sent to make a careful study of the cattle plague in Bohemia and Russia, being associated in this task with Professors Prinz, of Dresden, and Wirth, of Copenhagen. With Professor Gurlt, of the Berlin Veterinary School, he many years ago commenced a veterinary journal, the *Magazin*, a most valuable periodical, and to the pages of which he largely contributed, some of his articles being of great scientific and practical value. In 1829 he published a treatise on Rabies ; in 1833 a work on veterinary medicines, containing many original experiments with drugs ; in 1847, a book on operative veterinary surgery ; in 1850, an excellent work on veterinary surgery ; a volume on horses in 1851 ; a monograph on the diseases of the dog in 1853 ; and a veterinary conspectus in 1856. He also contributed largely to Canstatt and Eisenmann's *Jahresbericht*, a medical and surgical journal. Full of years, and honoured by his sovereign, his country, and his profession, Hertwig's death, though expected, will nevertheless be severely felt. He was a typical German in everything pertaining to science, to patriotism, and to manliness. The deaths of Hering and Hertwig leave blanks in our list of Honorary Fellows which will not easily be filled.

Notes and News.

A Fasting Dog.—The *Metzer Zeitung* tells a story of the "Dog of the Regiment" which has endured a fast greatly surpassing the celebrated performance of Dr. Tanner. The Foot Artillery Regiment, No. 7, possess a hound of which it is justly proud, and is now likely to be prouder than ever. In spite of the affection of the officers and men for their favourite, by some luckless oversight they left their dog behind them when they departed from Metz, on June the 1st, for the artillery practice on the Wayner Heath. They concluded that some of the good citizens would look after their well-known favourite, and confidently expected to find it safe and sound on their return to Metz. They did not re-enter the old Lotharingian city until the 9th of July, having been absent exactly thirty-eight nights. To their dismay and grief they found their faithful companion in one of the rooms of the barracks of the Rhine, totally powerless, a mere bag of bones, but still alive. Not the least trace of any means of nourishment was to be seen in the room; but there were plentiful signs that the poor dog, in order to still the pangs of hunger, had gnawed at the wood of the wainscot and furniture. Dr. Tanner at least obtained what nourishment is to be got out of pure water; but how the poor animal managed to keep life in his body, without either meat or drink, for thirty-nine days, is certainly a riddle. The sceptic will naturally incline to the suspicion that something eatable must have been left in the prison. When the animal was discovered his exhaustion was so intense that he could only take milk nutriment in the smallest portions; but after three days of careful and constant medical treatment, he could stand again upon his legs, and at the end of a week was able to eat meat.

Protective Inoculation for Contagious Pleuro-pneumonia.—As a proof of the strong belief in the efficacy of inoculation for Contagious Pleuro-pneumonia as a prophylactic measure, the new French law with regard to Veterinary Sanitary Police, in Article 9, ordains :—"In the case of Contagious Pleuro-pneumonia, the Préfet shall order the slaughter, within two days, of animals certified to be diseased by the appointed veterinary

surgeons, and *the inoculation of all animals of the bovine species in the localities declared to be infected with this disease.*"

We learn that Mr. Rutherford, Army Veterinary Department, now serving with the troops in Natal, having obtained permission from the Colonial Government, has been very successfully inoculating cattle to preserve them from the disease, which is a veritable scourge in South Africa. If inoculation is properly performed and precautions taken with regard to surrounding circumstances, there can be no doubt whatever as to the result.

RABIES IN DOGS.—A contribution to knowledge of this disorder has been recently made by M. Galtier (*Comptes-Rendus*). The most important of the conclusions which he draws from his experiments is that the saliva of a mad dog, obtained from the living animal and kept in water, continues virulent five, fourteen, and even twenty-four hours afterwards. This fact has consequences which everybody should be aware of. Thus it seems that the water of a vessel in which a mad dog may have dropped some of its saliva in attempting to drink should be considered virulent at least during twenty-four hours ; and next, that as the saliva of a mad dog which has succumbed to the malady or has been killed does not lose its properties through mere cooling of the body, it is important, in examining the cavities of the mouth and throat after death, to guard against the possible danger of inoculation. M. Galtier tested rabbits with regard to rabies, and found it transmissible to them from the dog ; also, the rabbits' rabies from them to animals of the same species. The chief symptoms are paralysis and convulsions. The animal may live from a few hours to four days after the disease has declared itself. It is notable that the period of incubation is much shorter in the rabbit than in other animals, and this makes the rabbit a useful reagent for determining the virulence of a particular liquid. M. Galtier found salicylic acid, injected daily under the skin, powerless to prevent the development of the disorder in rabbits.

THE EPIZOÖTY AMONG ANGORA GOATS IN SOUTH AFRICA.—We learn from Cape Town, under date of August 16th, that a fresh outbreak of disease among the Angora goats in the Bedford district is reported, and many thousands have already died.

FRENCH HORSES.—Although the French Government studs now contain nearly 2,000 sires of different breeds, and though the amount of money spent in encouraging horse-breeders generally has been increased to a considerable extent, the officers whose duty it is to buy horses for the army remounts find it no easy matter to procure a sufficient number ; and at a recent meeting of the committee which has the management of the *haras*, it was agreed to recommend that the prices at present paid by the Minister of War should be increased. The average given for cavalry and artillery horses is no higher now than it was thirty years ago ; so that those who breed horses at all do not find it remunerative to attempt to produce animals suitable for military purposes. This increase in price can only be effected by a vote of the Chamber, which, when the army estimates are next under discussion, will also be called upon to vote an addition to the credit now allotted for forage, as the committee have also come to a unanimous decision that the horses of the cavalry and of the artillery are insufficiently fed. The force of routine is such that horses are given less food in winter than in summer ; whereas, since the reorganization of the army, the bulk of the work has to be done in the winter. As M. Tisserand, the Director of Agriculture, has pointed out, there is a great disproportion between the end which the Ministry of War seeks to attain and the means which it employs. It exacts from horses much more work than formerly without giving them more food, and wants to buy horses which are bigger and stronger without paying a higher price for them.

INOCULATION OF RABIES.—M. Pasteur and his assistants have succeeded in communicating rabies by the inoculation of the brain of a dog dead of the disease. The experiments were successful with pieces of the cortex and of the medulla oblongata, and with the cerebro-spinal fluid. There is, of course, nothing very remarkable in this result. It has long been known that the virus is widely diffused in the body of the dog, and it would be strange if the brain did not contain it, when we consider the demonstration which the symptoms afford of the action of the poison on the nerve-centres. M. Pasteur, moreover, asserts that by trephining a healthy dog, and placing in contact with its brain cerebral tissue from a rabid animal, not only is the disease communicated with certainty, but the incubative period is reduced to a few days in every case. The disease may manifest itself in either of its two habitual forms—the ordinary form, or "dumb-madness."

Correspondence, etc.

OUR ACT OF PARLIAMENT: WILL IT BENEFIT OUR PROFESSION?

SIR,—It has been said, "Why, you are legalizing quackery"; and the query has been put, "What better will you be now that you have got your Bill passed? you have placed yourselves under the Privy Council"; and, again, it is said that "the non-qualified man is more honoured and more benefited than the qualified man is." My object in writing the following lines is to examine and discuss the question carefully and dispassionately, and if possible to come to a clear and correct understanding of the whole matter.

In the first place, it will be well to remember that from the earliest period in the history of the veterinary profession, a want was keenly felt by its members—a discontented, dissatisfied feeling existed; and as time went on every member felt this want more and more keenly—it became a serious and very important grievance. The want referred to was some security or assurance that the knowledge we had acquired at so much time, labour, and expense, should be acknowledged and protected. The exercise of this knowledge was our living, and our life. It was felt to be a grievous injustice, when any ignorant, unprincipled man, possessing a little common horse-knowledge, which had not cost him one sixpence nor one hour's study, but who possessed a very large amount of effrontery and audacity, could set up in opposition and emblazon on his sign the name and title of "veterinary surgeon," and this too with perfect impunity. There was not the slightest illegality in his doing this; he was not acting unlawfully in representing that he had an equal right to this title with the member who had spent the greater part of his life in learning, studying, and acquiring this special knowledge, and had finally obtained a diploma setting forth that he was an educated, scientific, and qualified veterinary surgeon. So great was this grievance felt, that in the year 1844 some of our most eminent and worthy members applied to the Government of that day to obtain a Royal Charter of Incorporation. Although this Royal Charter elevated our profession and gave it an importance and standing it never had before, it was fouud that it failed utterly to give us the protection we all yearned to possess, viz., a power to prevent empirics and impostors deceiving the public in assuming the name or title of veterinary surgeon. It is quite true we have never made a stand and insisted upon the exclusive right to this title; and ever since that hour every earnest well-wisher in our profession has never ceased urging upon the powers that be to apply to Parliament

for an Act embodying a clause making it a penal offence in any one assuming the name or title of veterinary surgeon, unless he possesses the diploma of the Royal College of Veterinary Surgeons ; this power no Royal Charter could give. The hitch existing between the Royal College and the Highland and Agricultural Society of Scotland interfered for many years in this matter, until the pressure put upon the Council from every part of England, and also from Ireland, became so great that the matter could not be any longer delayed, and our President, Mr. George Fleming, had a draft of a Bill drawn up which embodied this penal clause, and laid it before the Council, who discussed it and agreed upon its provisions. He applied to Parliament, and after almost superhuman labour, tact, and ability, he has succeeded, in the face of many serious difficulties and opposition, in getting it passed through all its stages, and it is now the law of the land ; this, too, without the profession or the Council having been subjected to the expense of one penny. Thanks to the earnestness, sincerity, and magnanimity of one man, no greater boon was ever conferred on a profession than this ; it is an act worthy the undying remembrance and gratitude of a great and noble profession, which has had a rich and useful past, a brilliant present, and now a hopeful and splendid future.

The Effects of the Act.

In the first place, the members of the profession, seeing that they have now the exclusive or prescriptive and legal right to the name and title of veterinary surgeon ; seeing that from and after the passing of this Act no one can adopt the name or title of veterinary surgeon, save those who have obtained the diploma of the Royal College of Veterinary Surgeons, possess the certificate of the Highland and Agricultural Society of Scotland, or have been registered by the Council of the Royal College of Veterinary Surgeons ; this fact will at once remove from their mind that feeling of dissatisfaction and discontent which had haunted them, and to which they have been a prey ever since they entered the profession. No man can use the initials M.R.C.V.S. after his name but he who holds the diploma of the Royal College of Veterinary Surgeons. This of itself will give our profession a new footing, a new era, a new life.

In the second place, instead of any one being at perfect liberty to commence business whenever and wherever he likes, and call himself a veterinary surgeon, as was the case until the other day, our Act steps in and says : Unless you possess a diploma of the Royal College of Veterinary Surgeons, or a certificate of the Highland and Agricultural Society of Scotland, or are registered by the Council of the Royal College of Veterinary Surgeons, you cannot assume the name or title of veterinary surgeon. (Our President fought like a Trojan for the exclusive right to the name and title of veterinary surgeon ; but everything was against him ; all the arguments went against him, both in the House of Lords and in the Commons.) To the non-qualified man it says : If you have practised continuously for five or more years, you can apply for registration to the Council of the Royal College of Veterinary Surgeons any time within one year after the passing of this Act, producing to the Council evidence of your title to registration, by statutory declaration of yourself and of other persons able to testify on your behalf, or such other evidence as that Council reasonably requires, you shall be registered under direction of the Council accordingly. If the said Council, in their discretion, grant you registration, you will be entered in their register under the heading of "Existing Practitioners," and without such registration you cannot practise your calling, since you may be at any moment summoned before the magistrate and fined twenty pounds ; and,

moreover, any person practising in any manner on horses or other domesticated animals without diploma, certificate, or registration, under whatever name or title he may choose to assume, shall not be entitled to recover in any court any fee or charge for performing any veterinary operation, or for giving any veterinary attendance or advice, or for acting in any manner as a veterinary surgeon or veterinary practitioner, or for practising in any case veterinary surgery or any branch thereof.

The Council have the power to refuse registration if the evidence is not satisfactory to them. In such a case the applicant can apply to the Council to state in writing the reason for the refusal, and he may appeal to the Privy Council, and the Privy Council, after communication with the Council and the appellant, may either dismiss the appeal or order the Council to register the appellant under this section. It is considered that the number of applicants for registration will not be numerous, and that the cases in which the Privy Council will exercise their power to order our Council to register will very rarely, if ever, occur. It is simply the custom in every Act of Parliament to have a clause similar to this inserted in it in all such cases; so that none but those members of our profession who possess exceedingly thin skins, or are fastidiously sensitive, need feel any anxiety or alarm on this head.

Some members of our profession have thought proper to petition against this Bill. Their action could only be ascribed to one of two causes: either they did not understand our position, or else they are men whom nothing will please or satisfy. Surely there is no man possessing any experience or knowledge of the world, or an average amount of intelligence, who would for a moment entertain the idea that our legislators would pass a Bill which contained one or more clauses, the object of which was at one fell swoop to ignore, or snuff out, a large body of men who had been following an honourable calling in a legal and lawful manner, and many of whom had been in practice for a long series of years with credit to themselves and with satisfaction to their employers, and at the same time provide no alternative for them. I say, any man holding such views, such hopes, such promises, is luring you with promises impossible of realisation. Yes, it would be impossible, utterly impossible, to get any bill passed by our legislators which did not provide for and recognise their claims. It must never be forgotten that our legislators have to legislate for the whole community, rather than for a select party. These problems can only be grasped and solved by unprejudiced men—men possessing the clearest and calmest exercise of the understanding.

It is sad to reflect upon and contemplate the immense damage and mischievous effects done our profession by this opposition. The non-qualified men soon discovered that there was a split in the ranks of our profession, and availed themselves of the splendid opportunity it gave them; it strengthened their hands immensely, which they used with a vengeance. It put an argument into the mouths of the members of Parliament who were opposed to us, and who were intensely in favour of giving quackery and empiricism a most magnanimous and generous consideration and support. There sprang up immediately four notices of motions to have the Bill read that day three months, besides several amendments, which wellnigh wrecked the measure. Had we been as true and loyal to each other as the non-qualified men were to themselves, we could have had this Bill passed with one-thousandth part of the anxiety it has cost. It certainly would have been a much better Bill; for example, as only one instance, it would without doubt have embodied in it a clause giving exemption from juries.

In conclusion, let me remark that up to this very moment quackery and

imposture have been constantly on the increase, as against our profession, and they would have gone on increasing, and this, too, it must be borne in mind, with perfect impunity—not unlawfully. Instead of which, see the difference! on and after December 31, 1883, quackery, so far as veterinary medicine is concerned, will be finally and decidedly extinguished. No man after this present date will be allowed to commence practice, or to practise at all, unless he has the diploma of the Royal College of Veterinary Surgeons, or a certificate of the Highland and Agricultural Society of Scotland, or registration of the Council of the Royal College. *No other man can follow the calling* of treating the diseases or ailments of the horse and other domesticated animals, under any name or title whatsoever; if he makes any charge or fee for this work he cannot get it, he cannot recover in any court. And, further, if he has the temerity to take or use the name or title of veterinary surgeon, or veterinary practitioner, or any name, title, addition, or description, stating that he is a veterinary surgeon, or a practitioner of veterinary surgery, or any branch thereof, or is specially qualified to practise the same, he shall be liable to a fine of not exceeding twenty pounds. Or if he has the audacity to take or use any name, title, addition, or description by means of initials or letters placed after his name, or otherwise stating or implying that he is a fellow, or a member of the Royal College of Veterinary Surgeons, he shall be liable to a fine not exceeding twenty pounds, the prosecution to be undertaken by the Council or with the written consent of the Council.

Yours truly,

Manchester, Sept. 14. THOMAS GREAVES, F.R.C.V.S.

THE VETERINARY SURGEONS ACT.

DEAR SIR,—I have read, with a great deal of pain, the somewhat scurrilous letter signed "Lancashire," published in this month's Journal. Do you not think, sir, that now that we have won the victory and obtained our Bill, we can afford to forget the turmoil and angry feelings naturally engendered in all warfare? Victors can certainly afford to be generous. But in the letter of "Lancashire" there is one statement which is not in strict accordance with the truth. The candidature of Mr. Stephenson as a member of Council was promoted by the North of England Veterinary Medical Association. It was proposed by Mr. Dudgeon, the then President, and seconded by myself, that Mr. Stephenson be proposed as a member of the Council, and that we, as an association, use our best endeavours to secure his election. It is known to you, sir, that in every way consistent with honourable warfare I have opposed Mr. Stephenson in his antagonism to the Veterinary Surgeons Bill; but now that the Bill has passed, I consider that, as in all political warfare, our enmity is at an end. We have won, and it certainly is not generous to turn round and kick (Lancashire fashion) the man we have beaten, but rather try to make him our friend. The unity of the profession will certainly not be promoted by angry feelings or scurrilous letters, nor its honour increased in the eyes of the public by any such means.

I remain, dear sir,

Yours very faithfully,

W. J. MULVEY,

President, North of England Veterinary Medical Association.

Bishop Auckland, September 19th.

[We certainly quite agree with our correspondent that, now that the victory remains with the profession, no further reference need be made to those who appeared to be determined that such a valuable measure as the one recently obtained should not become law. At the same time it will be seen, from the date of the letter to which he alludes, that it was written when the most sanguine supporters of the Bill were almost, if not quite, in despair ; and it was printed, and we may even say published, before the Royal Assent had been obtained. The letter was only one of a multitude sent for publication, some of them written in even stronger terms, and all expressing anger and disgust that there should be any one in the profession so bitterly opposed to its best interests. This feeling was nothing more than natural at a time of great anxiety and suspense, when not only our present but our future welfare depended on the success of the Bill, which was a public, not a private measure. The criticisms on the conduct of those who appeared to have done their utmost to mar its progress were therefore of a public and not a private nature. But the profession, having won the day, can well afford to be generous to its opponents, and say no more about them.]

AN APPEAL TO THE NORTH COUNTRY PRACTITIONERS.

Sir,—The importance of Veterinary Medical Associations as a means of improving our *status*, by interchanging opinions, and creating a more friendly spirit and feeling amongst brother practitioners, is in most parts of England duly appreciated, as shown by the establishment of some place where they can periodically meet and discuss matters of professional interest.

The purport of this letter is, Mr. Editor, with your permission, to ask those whom it most concerns, if the time has not come to establish an Association for the Northern Counties and South of Scotland?

Being but a young practitioner, I feel reluctant to take any initiative in such a movement, but am most anxious to see the establishment of a society for the north, say at Carlisle, which is central and easily accessible from all the adjoining counties and south of Scotland.

In the early part of summer I spoke to Mr. Carlisle (the oldest practitioner in Cumberland) on the matter, and he expressed a great desire to effect such a movement, if he could only have assistance ; several other practitioners to whom I have spoken signified their willingness to join. Therefore, Mr. Editor, I ask you to allow me to appeal to the north country practitioners to move in this matter—to be up and doing, and permit themselves no longer to stand aloof from our own interest. If the elder members will only unite and take action, I can assure them that the hearty co-operation of their younger professional brethren will be most willingly accorded.

I am, sir,

"A Young Cumbrian."

[We feel certain that the appeal of our enthusiastic correspondent will be heartily responded to. In these brighter days, Veterinary Medical Associations are absolutely essential, not less to the body corporate than to individuals. The benefits derived from them are immense, and we therefore gladly second the proposal of "Young Cumbrian," and will gladly give all the assistance we can in the institution of a Border Veterinary Medical Association. There are many excellent practitioners on both banks of the Tweed who will at once join in the movement.]

THE VETERINARY CONGRESS OF 1881.

SIR,—Mr. Ward, in your last issue expresses surprise at the absence from the late Congress of certain principals of schools. As I am in the list of absentees, may I suggest to Mr. Ward the advisability of making himself acquainted with the reasons of such absenteeism before condemning us? In the first place, the promoters of the Congress placed themselves in antagonism to the Scottish Veterinary Medical Associations, by their treatment of the certificate-holders of the Highland and Agricultural Society, although these associations had previously expressed the intention of doing all in their power to assist the promoters of the Congress. Individually, however, I should have assisted at the Congress had I been able. I am not, however, ubiquitous, and I fancy if my friend Mr. Ward had got through the amount of work which I did last winter and spring, he would not have been particularly anxious to make two journeys from Edinburgh to London in the space of a fortnight. Had the meeting of Congress been held about the same time as the Council meeting, I should certainly have felt it my duty, as it would have been a pleasure to attend, and I think by a little foresight the members of Council who had long distances to travel might have been accommodated, by the promoters arranging the simultaneous holding of the former with the latter meeting.

Certainly, in the interests of the profession, and as a duty, I thought the Council meeting the more important one for me to attend.

I am, yours faithfully,

THOMAS WALLEY.

NATURA VERA OF BURSATTI AND CANKER.

SIR,—From Mr. Burke's letter in your June number, it is evident that he considers himself injured. I presume we are all at liberty to express our ideas regarding vexed questions of disease, and especially so when professional opinions are attacked and an attempt made to revolutionize them. Should the "impress of pique," which Mr. Burke feelingly suggests I must be suffering from, mean endeavours to prevent qualified practitioners' opinions being sneered at, and hasty conclusions forced upon them in their place—I say, should this be the "impress of pique," I confess I am suffering from it, and that in an aggravated form. Regarding the chemical reactions, I did not intend, and I am unwilling to believe that Mr. Burke ever thought that I meant from this, that the nature of a growth could be distinguished by its chemical reactions; I regret that my meaning was not plainer, and my powers of expression better. But before leaving this point I may be permitted to add that for some considerable period I have been taught that certain structural elements present certain and very characteristic chemical reactions under the microscope, which reactions assist us materially in arriving at a true knowledge of the substance we are dealing with, and it was bearing this in mind that caused me to mention it to Mr. Burke. In answer to Question 1, why does not Mr. Burke read my paper properly before attempting to remark on it? I fail to find in any part of it the statement "That I knew nothing at all of kunkurs found in internal organs." What I believe I said was "Visceral lesions have not been observed by me," and I am not aware that there was anything peculiar in that, as up to 1878 Mr. Meyrick, of the Stud Department, had only *one* opportunity of making a *post-mortem* of a Bursatti subject,* and his opportunities are infinitely greater than those of

* *Vide* VETERINARY JOURNAL, November, 1878.

a veterinary surgeon at regimental duty.* But whilst on this subject, note what Mr. Meyrick says in the following paragraph : "Strange to say, I found two or three pieces of kunkur on the lungs of another old Arab destroyed at the same time, *who had never shown any sign of Bursatti.* This is a most important fact, and I can fully bear it out, as I have repeatedly noticed the same thing. Only this very day a troop horse of my regiment was destroyed for a fractured limb ; his liver was full of kunkur, some pieces as large as a bean.† The cœcum was in a similar condition. This horse had never had Bursatti. How is this to be accounted for? By the calcific diathesis, I suppose."

Question No. 2 Mr. Burke has likewise mis-read. I asked if Epithelial Cancer (not any Cancer) ever healed spontaneously or broke out the following year, etc. ; and he quotes from a human surgeon to say that an enlarged gland left after operation or a cicatrix may be the seat of recurrent Cancer. What startling news ! Especially when it has no bearing on the case in point. Mr. Burke should remember that Cancer recurring after removal, is a very different state of affairs from Bursatti recurring after the apparent spontaneous arrest of the disease. There is no analogy between the two conditions. The course of human Cancer has been followed too clearly, and with a slight alteration I may be permitted to make use of one of his remarks, "That what occurs in man does not necessarily follow in the horse." Mr. Burke's authority speaks of the arrest of Cancer-growth and its gradual decay. Ask any human surgeon if he waits for the arrest and decay of Epithelioma? Mr. Burke kindly informs me that secondary or tertiary growths occur in the lungs and other viscera from Cancer. I can only thank him for this original remark, but would add that the information was not asked for. But are secondary deposits in internal organs common in Epithelioma in man? No, certainly the exception, according to the best authorities.

But Mr. Burke's second answer has brought to light a new affection, or rather one as far as I am aware of he has not mentioned before. He says, "That an animal may develop a tumour or sore similar in appearance, and without microscopical examination, not differing from that of Bursatti." Why did he not mention this most important condition in his original paper? Can it be an after-growth, the result of Question 2? Mr. Burke's postscript was superlative. The merest tyro who had ever cut through a kunkured liver would be able to say that there deposits existed in two different states by the sensation imparted to the knife in cutting. Why does not Mr. Burke prove the relationship between Kunker and Bursatti by other means than that of those deposits which we have shown exist largely, independent of either disease? Throughout the whole letter, the "Fly" theory, which formed such an important part of the original paper, is carefully avoided, and the silence is as deep as ever on the microscopical appearances of the affection.

I again repeat, Mr. Burke has not proved his point ; in fact, is further away from it than he was before. The disease never kills, occurs in the most vigorous as a rule, is not inoculable, the lymphatics are not affected, no inflammatory complications as abcesses, etc., no fever, the subject resists as well as do healthy animals trying and adverse influences, heat, wet, cold, hunger, hard work, and lastly, the presence of Kunkur, which is supposed to

* Mr. Burke in VETERINARY JOURNAL for February, 1881, says that death is so rare from it (Bursatti) that he never heard of a case. This, from such an authority, will be overwhelming proof that opportunities for *post-mortem* examinations are very few.

† I will send you a portion of the liver at my earliest opportunity.

constitute the specific character of this disease, is known to exist largely independent of it. I say, in the face of this, we are asked to believe that the affection is Cancer, that it is the same disease described by an eminent physician in these words: "It is commonly attended with severe pain, incontrollable by any known remedy, tends always, sometimes slowly, sometimes with frightful rapidity, to augment in bulk—eating away contiguous parts by their invasion and pressure, and breaking out, when near the surface, into foul and repulsive ulceration, producing often the most ghastly disfigurement; the appetite fails, sleep is gone, emaciation is great, and still increasing; the sallow, wan, cadaverous expression of face becomes more marked, the whole frame grows bloodless, secondary tumours, internal and external, form, and life is gradually extinguished in much physical misery." I may be obstinate and blind, but the conditions to me do not seem alike. Believe me, sir,

Yours faithfully,

F. SMITH, V.S.,

India, 8*th July*, 1881. *Army Veterinary Department.*

THE PATHOLOGY OF NAVICULAR DISEASE.

MR. EDITOR,—I beg to differ from your statement that it is useless to prolong our discussion on Navicular disease, as from your position as Editor, and Examiner of Veterinary Students, it is of great importance that you should not adopt a wrong theory, and I think that the profession generally will be astonished at your stating there is no navicular joint, or articulation; if that statement be correct, all the writing and discussion respecting Navicular joint disease during the last fifty years has been a delusion. I also differ from your statement that the inferior surface of the navicular bone is not covered with articular or hyaline cartilage, but with true white fibro-cartilage. Setting that question aside, it is well-known that the difference in the anatomy of such joints makes no difference in the pathology of disease. You also state that you have shown diseased bones for years, the appearances of which undoubtedly proved the correctness of the views you entertain as to the malady. The only bone that I have heard or read of your showing was the one you produced at the Southern Counties' Meeting, and that one you kindly allowed me to examine, and I found the whole cancellated structure of it so much diseased that it would not bear a section being made of it without crumbling to pieces. Consequently it supported my theory and not yours. I wrote to all the gentlemen who supported your theory at the meeting. Mr. Greaves and Mr. Barford replied that they had not any specimens to support their theory, notwithstanding that the latter gentleman had made such a bold statement in reference to the disease commencing in the synovial membrane thirty times to once of its commencing in the bone. Captain Russell sent one specimen with an ulcerated cartilage, which on a section of it being made showed a fine porcelaneous structure of the entire bone, consequently disease of long standing. Mr. Martin sent two bones with ulcerated cartilage, which on my making a section of showed the whole structure to be porcelaneous, indicating disease of long standing. He also subsequently sent the navicular bone of a young horse, said to have been going stumpy lately. There was no appearance of disease on the cartilage, but on making a section of it, the early signs of Navicular disease was shown by the enlarging and breaking down of the cancelli. This will show how far Mr. Fleming's views were supported by the members of the meeting. To prove that the disease does not commence in the bone, he must produce navicular bones with ulceration of the cartilage, and which

on a section being made does not show any altered structure of the cancelli. The other part of his theory, that the disease is often confined to the bursa for months before the bone becomes affected, is either an imagination or an adopted theory, as I do not hesitate in stating that he cannot prove it. According to that theory, if a horse receives a kick or injury near a joint, and the cartilage of that joint subsequently becomes ulcerated, it must be from inflammation of the bursa, and not from inflammation of the bone. Fifty years' practice in the dissection of joints has shown me that that theory is a fallacy.

Yours, etc.,

Broad Street, Bath, *September 9th*, 1881. THOS. D. BROAD.

[We must decline to discuss this subject further with our correspondent, but at the same time assure him that we fully recognise the responsibility of our position, and act upon that responsibility, whether dealing with theory or practice, facts or fancies. We do not venture to assert that Mr. Broad is in error ; at the same time we think it right to mention that our opinions or views with regard to the anatomy and pathology of the horse's foot are not amended or changed by his statements.]

THE ENEMIES IN OUR MIDST.

SIR,—Kindly allow me, through the medium of your valuable Journal, to inform the gentleman who signs himself "Lancashire" that I am the sole proprietor of the firm known as "C. Stephenson and Son, Veterinary Surgeons and Horse-shoers, Newcastle-on-Tyne."

Yours obediently,

Newcastle-on-Tyne, *September 14th*, 1881. GEORGE ELPHICK.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from F. Smith, 12th Lancers, Secunderabad; J. H. Steel, A.V.D., Ipswich; G. A. Banham, Cambridge; R. W. Burke, A.V.D., Aldershot; E. Stanley, Warwick; S. M. Smith, Grantham; J. C. James, Thornbury, Gloucestershire; R. F. F. Frost, A.V.D., Rangoon; F. Blakeway, Stourbridge; J. Cooper, A.V.D., Aldershot; T. D. Broad, Bath; "Young Cumbrian"; T. Greaves, Manchester; W. Leather, Liverpool; A. Gunn, Balloan, N. B.; A. W. Hill, London; T. Walley, Edinburgh; W. J. Mulvey, Bishop Auckland; C. Stephenson, Newcastle-on-Tyne.

JOURNALS, ETC. : *Journal of the United Service Institution of India; American Live Stock Journal; Lancet; Medical Press and Circular; British Medical Journal; Annales de Méd. Vétérinaire; Recueil de Méd. Vétérinaire; L'Echo Vétérinaire; Journal de Méd. Vétérinaire et de Zootechnie; La Presse Vétérinaire; Pen and Plow; La Clinica Veterinaria; Live Stock Journal; Mark Lane Express; Farmer; Agricultural Gazette; Revue Vétérinaire; Field; Lancet; Archives Vétérinaire; American Veterinary Review; Edinburgh Medical Journal; Practitioner; Army and Navy Gazette; Wochenschrift für Thierheilkunde; Repertorium der Thierheilkunde; Sanitary Review.*

NEWSPAPERS : *Irish Times; Boston Daily Evening Traveller; Scotsman; Leeds Mercury; Newcastle Chronicle; Lahore Civil and Military Gazette; North British Agriculturist; Maidstone Journal.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

NOVEMBER, 1881.

DIPTHERIA IN CALVES.

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR.

THE great interest that attaches to diseases which are transmissible from animals to mankind has, for many years, induced me to study them more carefully than perhaps the non-transmissible affections; while the supreme importance of the subject to medical men has often brought me in contact with them, and on several occasions has been the cause of my appearing at their meetings to discuss the relations between certain animal disorders and the same disorders in our own species. Invited by the Epidemiological Society to read a paper on the subject, I selected Diphtheria. I did this because it was a disease which, in animals, possessed some novel features, at least to the medical fraternity, and also because I had in mind the experiments which proved its transmissibility, and the excellent paper published by Dammann, in which not only is the malady well described, but the accidental and experimental transmission of the disease is abundantly proved. From the apparently absolute identity, or at any rate close analogy, between the disease in calves as described by him, and the malady so well pourtrayed by Mr. Macgillivray, I imagined the two descriptions must apply to one disease; and as Dammann had verified the nature of the disease he witnessed, both histologically, pathologically, and experimentally, to be diphtheritic, I imagined I had some reason, on this ground at least, to believe Mr. Macgillivray's cases to

be akin to, if not really, Diphtheria. Dammann I knew to be one of the foremost veterinary pathologists and observers in Germany, and not likely to mistake Tuberculosis for Diphtheria; and any one reading his paper, or even the very condensed report of it I gave in my essay, would not conclude that he was describing the first-named disease, with which he is probably as familiar as any one on the Continent. Mr. Macgillivray also mentioned that he had seen a case of the disease which he names Tubercular Stomatitis, in a horse: an animal almost, if not entirely, exempt from Tuberculosis, and that, with the exception of this instance and that of a cow, the malady was confined to *young* bovine animals—calves. He likewise asked whether certain sloughing sore throats occurring among farm servants might not have some relationship to this disease of calves.

Mr. Macgillivray challenges my judgment in calling in question his nomenclature, and this he has a perfect right to do; for I may be in error, not having seen his cases. But the very close resemblance of these cases to others recorded as of a diphtheritic nature, and especially Dammann's; the fact that they occurred in calves and a horse, and only once in a cow; and that people may have had sore throats through their relations with the diseased animals, certainly justified me, as I thought and think, in believing that it was Diphtheria, and not Tuberculosis, Mr. Macgillivray had to do with. I have made the most careful inquiries in every direction, in this country and on the Continent, and from all sides I am informed that Tuberculosis is *excessively* rare in calves. I have the statistics of abbatoirs in the large cities of Europe, collected for a number of years, and they prove this. Some of these statistics I have already given in my writings on Tuberculosis. I am not certain, however, whether I have referred to some of the most recent. I will select the reports of Veterinary Surgeon Adam, of Augsburg, Bavaria, for the years 1877 and 1878. In the abbatoir of Augsburg, in the first-mentioned year, he found that, exclusive of calves, about 2 per cent. of the cattle killed were tuberculous, and that of these more than 2 per cent. were more than a year old. No fewer than 25,000 calves were slaughtered in that year, and of these only four were tuberculous. So that in from 6,000 to 7,000 calves only one was

affected. Cows between one and three years old were very seldom diseased, but between three and six years Tuberculosis was common; beyond that age very common and more diffused. In 1878 there were 10,965 cattle killed, 256 of which were tuberculous, or 2.31 per cent., while in the same year 21,116 calves between two and four weeks old were killed, *but not one of these was found affected.* Other evidence of a similar kind might be adduced, but I do not think further reference is necessary to justify me in the assertion I made, that calves are extremely rarely affected with Tuberculosis. The disease Mr. Macgillivray describes appears to be essentially a malady of early age, whereas in adult bovines it must seldom occur, as he has only seen one case; and yet it is in these that Tuberculosis is by far the most frequent. It was Dammann, not I, who stated that he believed certain micrococci were diagnostic of calf Diphtheria. This belief was founded on his own personal observations; he was doubtless well acquainted with all the facts relating to micrococci in general, as in Germany their study has been made a speciality. All good authorities speak of these organisms as present in human Diphtheria. Billroth, years ago, remarked that in the secretions from muco-salivary Diphtheritis and urinary Diphtheritis, micrococci and streptococci are constantly found, and develop in these with the greatest rapidity. He also stated that micrococci are always found in large quantities in the diphtheritic layer covering mucous membranes; and Senator, another German pathologist, speaks of the fungus organisms which are constant and abundant in the epithelial shreds from the throat and the pseudo-membranous sloughs.

With regard to the dissimilarities pointed out by Mr. Macgillivray between Diphtheria in mankind and the so-called Tubercular Stomatitis of calves, or what I concluded was Diphtheria, we cannot regard them as of so much moment, on the whole, as might at first sight be imagined. The same disease in different species often, if not always, presents dissimilarities so great that it might be taken for an entirely different malady; for instance, Rabies, Anthrax, Tuberculosis (in cow and pig).

But we must not forget that Bretonneau has described a form of Diphtheria occurring in man, not much unlike the disease referred to by Mr. Macgillivray as witnessed in calves. And

Niemeyer and others have also alluded to Diphtheritic Stomatitis in the human subject.

In the milder forms of this Diphtheritic Stomatitis, at certain parts of the mouth, along the lateral borders of the tongue, and on the parts of the cheeks and lips which lie against the teeth, is at first found a whitish or somewhat dirty discolouration of the mucous membrane. These white spots cannot be wiped off, but after a few days the superficial layer of mucous membrane, with the exudation infiltrating it, falls off, and in its place is left an unhealthy-looking ulcer, which cleans slowly, and finally cicatrices from the margins. In more severe cases, where the exudation infiltrates and destroys the whole thickness of the mucous membrane, a large portion of the inner surface of the mouth is often converted into a soft discoloured slough. If this separates, a deep ulcer with irregular borders and uneven base is left. The loss of substance is but slowly filled with granulations, and the lost mucous membrane is not regenerated, but is replaced by cicatricial tissue. In severe cases it advances to the posterior surface of the gums, and the adjacent parts. The teeth become loosened, and occasionally the periosteum of the jaw is exposed and destroyed. In consequence of this, in some cases there are caries and necrosis of the maxillary bones. Niemeyer considers the slough to be diphtheritic. Senator compares it, in appearance, to the slough of a bed-sore.

It must be remembered that, so far as the pathological anatomy of the disease is concerned, the difference in the macroscopical appearance of the sloughs or pseudo-membranes in man and the calf is due, to a considerable extent at least, to the histological dissimilarities in the mucous membranes of the two.

Like Diphtheria in man, this disease of calves is far more common in early than adult life : another striking difference between it and Tuberculosis. And the results of medical and surgical treatment still further assimilate it with Diphtheria. Destruction or removal of the deposits or sloughs by caustics or the knife, or both, if resorted to in time, appear to be almost uniformly successful. Tuberculosis is not so easily cured.

But it must not for a moment be accepted that I am insisting on my supposition being the correct one. On the contrary, I am

averse to differing with such an excellent observer as my friend Mr. Macgillivray, with regard to a disease of which he has had so large an experience. In the search for truth we are all liable to wander off the direct track, and this may have been my misfortune with respect to the disease he so well describes. If he or any one else who has the opportunity will kindly forward me some of the sloughs or cheesy material, in as fresh a condition as possible, I may be able to set at rest, by experiment and otherwise, some of the uncertainty which still haunts me as to the exact nature of the Tubercular Stomatitis of Mr. Macgillivray.

"GANGRENOUS STOMATITIS — TUBERCULAR STOMATITIS — DIPHTHERITIS?" A DISEASE AFFECTING THE TONGUE AND MOUTH OF THE OX.

BY J. C. JAMES, M.R.C.V.S., THORNBURY, GLOUCESTERSHIRE.

My object in writing on the above subject is merely to record my experience, and to suggest an agent for treatment which has proved very successful in my practice, and which I would strongly recommend my professional brethren to try.

In my experience, the disease has been most prevalent in one-year-old and two-year-old beasts. I have had dozens of cases in cattle at this age, and have two at the present time under treatment. I have had a few cases in calves, and several in old cows. I have always looked upon it as being of a tuberculous nature; therefore my views would agree with those entertained by Mr. Macgillivray. I have never been able to prove its contagiousness, although the affected animals have freely associated with the non-affected ones, and have eaten the food which was covered with the saliva from the affected beast, before my attention was called to the case. On two occasions only, have I had two animals affected at the same time on one farm. My experience here is in accord with that of Capt. Russell, whose report appears—with many others—in the Sept. and Nov. numbers of the *Veterinarian* for 1877, and communicated by Professor Axe, who made some experiments which are very

interesting. Now for treatment. Ten years ago I cut and scraped the tongue, and used every chemical agent I could think of as likely to do good, but without success. Recovery then was the exception, until I was induced to try Tinct. Ferri Perchlor.; and now—and for the last seven or eight years—recovery is the rule. I use Tinct. Ferri Perchlor. with an equal quantity of water, or Liq. Ferri Perchlor. Fort., diluted with two parts of water, and well applied to the affected parts of the tongue or gums by means of a small mop, made by tying a pledget of tow on the end of a small stick, and applied every day if the animal is not too troublesome to dress. As it gets better every other day will do to dress, and the dressing might be further diluted if necessary: an attendant can easily be instructed how to do it. Those of my professional brethren who will give the above a fair trial will find the tubercles disappear under its continued use, and the ulcers heal. I have had the most inveterate cases yield to this treatment alone, and make good recoveries.

TUBERCULOSIS IN A COW, ESPECIALLY WITH REFERENCE TO MILK CONTAMINATION.

BY H. OLVER, F.R.C.V.S., TAMWORTH.

THE patient, a pure-bred Kerry cow, was the property of Mr. Bassford, of Dunstall Farm, near Tamworth. Mr. B. for some years past has annually lost some four or five beasts in, to him, an unaccountable way, and he was somewhat inclined to attribute it to the great quantity of sewage matter in the water of a river which bounds, on one side, several meadows on his farm; he consequently, in calling my attention to this cow, wished me to say, after making *post-mortem* examination, if such was the case. She was bred by Sir R. Peel, Bart., from his well-known herd of Kerrys, and was sold at his sale of surplus stock in November, 1878, to a dairyman in this town. After calving, it was found that the milk, though exceedingly rich, was not enough in quantity to pay well to a milk-seller; he consequently sold her to Mr. Bassford in April, 1879. Mr. B. says that she lived in the strawyard all the

following winter, and was always fat, whilst the others were lean. She produced a healthy calf, which is still in Mr. B.'s possession, and milked well up to within six weeks of her death, when she was let dry to feed. "She always seemed kind in herself up to that, and then melted like butter in the sun." One point that I gathered seemed to me of especial interest. Mr. B. said that the cow's udder after being milked, and during the time that she was "dry," was always as "soft as a glove"; but about six weeks before she was left dry the last time, he one evening, in noticing the cows after milking, was surprised to see this cow's udder so full, and charged the man with not having milked her; but after examining her himself, he found his mistake, and the man remarked to him that she (the cow) "had been getting a very fleshy udder lately."

I saw the cow first about a fortnight since; she was somewhat low in condition, but not especially so, and was turned out of the dairy to feed. There was but little to note in her symptoms; the appetite was good, the skin loose and healthy-looking, and she was lively in herself; the breathing was somewhat quickened, and in auscultation a deadened sound was heard; her fæces were of a natural consistency, and the urine healthy, but she was gradually sinking in flesh. I prescribed vegetable and mineral tonics, combined with common salt and a liberal diet, as I formed an opinion that she was suffering from "flukes in the liver"—which, unfortunately, the majority of the bovine species in this district are, more than one herd having been entirely done away with under my advice. The above treatment proving of no avail, I advised that she be slaughtered, which was done to-day, and the autopsy revealed Tuberculosis in one of the most virulent forms that I have yet seen it. I send you portions of the mesenteric glands, the viscera of the chest, and the mammæ. I do not remember, with a considerable experience in this malady, to have ever seen the latter organ affected before

Notes by J. H. Steel, M.R.C.V.S., September, 1880.

The specimen consisted of the parts mentioned, exhibiting every imaginable stage of tubercular disorder, but nothing required special notice, with the exception of the portion of mammary gland. Here the difference between the diseased and healthy

parts was most striking, the former with its yellow colour and caseous deposits, as well as simple milk accumulations, presenting a very characteristic appearance; the tubercles in the organ were large, and mostly in the caseous stage, but not all so. This gland, as Mr. Olver says, is undoubtedly very seldom the seat of tubercle, but now it is clear that in dealing with scrofulous animals we must consider milk contamination from two sources—(1) As a secretion it may share any specific disorder of the blood; (2) Tubercle elements may be actually intermingled with it, derived from disease of the gland itself.

The latter source would render the milk most dangerous to calves and children. In this connection the case is decidedly one for record. Another important question suggested by the carefully ascertained history is, whether, as the owner thought, the river may not have acted as the conveyer of contagium. *We are of opinion it did not*, but we must always have an eye to possible transmission of disease in this manner; we have no positive evidence to the contrary.

CASES RECENTLY OCCURRING IN PRACTICE.

BY A. E. MACGILLIVRAY, M.R.C.V.S., BANFF, N.B.

DISEASES or abnormalities of the rectum are so very seldom noted in our patients that I will preface with two such cases, which, although not exactly in my own practice, lately came under my notice while in consultation with my neighbour, Mr. John Cooper, M.R.C.V.S., Portsoy, N.B.

1. *Fleshy Tumour in Rectum of a Two-year-old Colt.*—I was sent for to see this colt, in company with Mr. Cooper, as the tumour had become so large that it could scarcely be returned when it popped out of the rectum during defæcation or during tenesmus. When the colt was brought out for our inspection the tumour was entirely inside, but one could easily see that there was something very wrong, from the large amount of nasty bloody material with which the tail, thighs, and hips were smeared.

On exploration I found a large fleshy tumour, with a broad base, firmly attached to the floor, so to speak, of the rectum. It

was entirely confined to the *inside* of the rectum, and had no attachment otherwise than to the floor of the same, a fact which accounted for the comparative ease with which it had hitherto popped out and into the rectum. We resolved to remove the tumour by the actual cautery, to prevent hæmorrhage. And here I may be allowed to remark that I have often removed such tumours from the vagina of cows, with very satisfactory results, by the same means.

We first of all pulled the tumour outside—quite an easy matter; we then secured it by passing tapes through its body in two directions, and, finally, quite slowly and cautiously removed the whole lump with a sharp-edged hot iron. Very little hæmorrhage occurred, and this was checked with little difficulty. After a few dressings with carbolized olive oil, the colt made an excellent recovery. The tumour weighed about three pounds.

2. *Abscess in the Rectum of a Bull-calf.*—This was a valuable, pure short-horn calf, about six months old. The owner's attention was drawn to him by his being off his food and in an almost continual state of tenesmus, or, as the owner said to Mr. Cooper, he was always trying to get "either dung or water." As a matter of course, some derangement of the urinary organs was first thought of, but nothing wrong could be discovered. A veterinary surgeon, a friend of the owner's, was asked to look at him, and declared "the calf was of no use." At last Mr. Cooper thought of exploring the rectum, and at once discovered an oval-shaped soft lump, about the size of a goose's egg, in the floor of the rectum, about six inches from the anus. It was apparently attached to nothing but the walls of the rectum.

I was asked to see the calf in consultation with Mr. Cooper; and, after some consideration as to the possibility of removal by ecraseur, we decided that, as we seemed to feel slight fluctuation in the lump, we would explore with a horse probe (Gunn's improved trocar and canula, by Arnold). Accordingly Mr. Cooper operated as follows:—Introducing one hand into the rectum, he firmly grasped the lump, and pulling it as near the outside as possible, he slipped the probe down between two of his fingers into the lump, or, as it proved to be, abscess, and evacuation of its contents immediately followed—thin yellow,

glairy matter, the same as is often found in scrofulous tumours about the parotid and similar glands. On subsequently exploring, the lump had altogether disappeared, and has not as yet (six weeks after) showed any signs of refilling. After-treatment consisted of one or two injections of carbolized olive oil. In a day or two the tenesmus entirely disappeared, and the young fellow became quite frisky.

General Remarks.—I have often met with abscesses in cows, lying between the vagina and rectum, and have sometimes evacuated them *per vaginam*, and sometimes *per rectum*. These abscesses have always contained purulent pus, with an abominable smell, and have generally resulted from injuries during parturition or coition. This was not the case, however, in that of the bull-calf above referred to, for the matter had no smell, and was of the colour and consistence mentioned.

The tumour found in the colt's rectum, when protruding, gave one the idea of a genuine case of *prolapsus recti*. Manipulation, however, soon set the matter at rest. Such tumours are comparatively common in the vagina of cows, and more rarely in mares. I remember an extraordinary case of this sort in a two-year-old quey, newly calved. I was sent for in extreme haste to attend the quey, as "her bed was coming down"—*prolapsus uteri*. On my arrival I found the owner holding up with a cloth, and endeavouring to return, a very large body indeed, which was protruding beyond the valva. A mere glance showed me it was not the uterus, and on examination I found it was an immense tumour, attached to the floor of the vagina by a comparatively small pedicle. This pedicle had its attachment eight or nine inches into the vagina. With little difficulty I passed a ligature round the pedicle, and then slipped my knife through between the ligature and tumour, which, to the owner's astonishment and delight, fell away. No after-treatment was adopted, the ligature being left to drop away of its own accord. The tumour weighed nearly six pounds.

3. *Disease of the Prostate Gland in a Dog.*—This was a peculiarly interesting case, more especially as the dog was a very valuable, handsome, and favourite retriever, of an uncommonly large size. In the month of August last I was asked to attend

and examine the dog, which was said to be daily losing flesh, and passing blood and matter in his urine.

I found my patient much emaciated, very stiff, and a very disagreeable smell about him. On inquiry I was informed that his appetite was good and his bowels quite regular, but that he would voluntarily take no exercise, and was always pained when passing urine, which he usually did every time he was taken from his kennel. Accordingly I had him taken outside, and he immediately passed some urine, which was pretty normal in appearance, but was followed by straining, and subsequently by about a couple of teaspoonfuls of fluid pus, very thin, the last of which was slightly tinged with blood. The keeper, however, informed me that at first there was much more blood.

Thinking it might be some irritation about the urethra, as I could see nothing wrong about the glans penis or inside the prepuce, I ordered a slightly astringent lotion, with a little Vin. Opii, or injecting the urethra, and a dozen Sod. Carb. et Opii pills.

A week after I found my patient becoming worse, the discharge of pus having increased ; so I ordered a change of diet and three dozen Copaiba Capsules, to be given one three times a day.

At my next visit I found that the *whole* of the urine passed by my patient was now more or less tinged with pus, from which fact I concluded that the inner coat of the bladder had become affected. I therefore resolved to inject a weak solution of Argent. Nit. ; but, on attempting to pass the catheter for that purpose, I failed to get it all the way into same ; it stuck apparently about two inches from its intended destination, so I was compelled to be satisfied with forcing the lotion through the catheter in that position. Three days after, however, on again attempting to pass the catheter, it at once slipped quite easily into the bladder, and I injected a rather stronger Sol. Argent. Nit., and ordered a continuance of the Copaiba Capsules.

It was all of no use, however, for the poor brute died quite suddenly about three weeks after my first visit.

On *post-mortem* examination I found that the immediate cause of death was blood-poisoning, but that the affection from which the dog had suffered so long and so severely was disease of the prostate gland, which, I feel bound to confess, had never

occurred to me as being at all likely; in fact, I never even thought of such a thing. So it was, however. The prostate gland was enlarged to thrice its normal size, and was quite engorged with thin purulent pus, having a most abominable smell. Here, then, was the source of the extensive supply of pus which was so freely discharged at every micturition. I found the bladder about half filled with pus and urine, and the mucous coat much thickened. By pressing upon the urethra in front of the prostate, and squeezing this gland, I found that the pus from the prostate passed freely back into the bladder, thus accounting for the large discharge of pus and urine *together* during the latter stages of the case.

At first, as mentioned, there were only a few drops of blood observed after each passing of urine. This had, no doubt, been during the initiatory or inflammatory stage of the disease, which must have ended in suppuration, and so from blood to pus, as I found it.

A short time previous to his sudden death, the patient suffered from several severe rigors; during one of these he emitted a few heart-rending cries, and was almost immediately thereafter found dead by his keeper. Without doubt the blood-poisoning resulted from absorption of some of the immense quantities of pus generated, in which I suppose the mucous membrane of the bladder must have latterly taken part. The kidneys were quite healthy, but the symptoms of blood-poisoning were pretty general throughout the whole body. There were large yellow clots on both sides of the heart, partly attached to the valves.

I could not venture a guess as to what might have originated the disease, whether from injury or otherwise; and I am equally uncertain as to what good might have been done by treatment, had the seat of the disease been known from the first. It is a most intractable disease in the human subject, and its treatment generally rather dubious and unsatisfactory.

4. *Occlusion of the Vagina, and large Purulent Collection in the Uterus of a Yearling Heifer.*—About a week ago I was asked to look at a *white* yearling heifer, which was said to be suffering from continual calving pains, although only about a month served with the bull. On attending I found matters as stated, with the

addition of a dark-coloured bloody discharge from the rectum. There was positively not the slightest sign of any discharge from the vagina. I lost no time in exploring both these passages. in the vagina I found complete occlusion at the *ostium vaginæ*, *i.e.*, immediately behind the fossa into which the *meatus urinarius* opens. On introducing my hand into the rectum I found it almost occluded by an immense gathering or tumour below, which seemed to occupy the whole pelvic cavity.

Taking into consideration the vaginal occlusion, I had no difficulty in diagnosing "a purulent accumulation in the uterus, and in the cavity of the vagina up to the occluded *ostium vaginæ*."

The bloody discharge from the anus was simply the result of the severe tenesmus.

I resolved to endeavour to relieve the quey without delay. Introducing my hand *per vulva*, I searched until I felt what I took to be the place where the opening *ought to be* (*per ostium vaginæ*) into the vaginal canal. I then, with considerable difficulty, *forced* one finger, and then two, through the occluded ostium, and per that opening there instantly escaped, in a very strong jet-like stream, about three gallons of thin yellowish fluid, or purulent pus, with the most horrible smell imaginable. Along with the two attendants, I made my escape from the loose box as fast as possible.

Having a plentiful supply of carbolic acid at hand, I sprinkled it quite liberally all round the loose box; at the same time I made up a pretty strong aqueous solution of the same, and injected it into the uterus. The quey was now severely pained, so I made preparations to inject some morphia subcutaneously; but after the injection of a second quantity of Sol. Acid. Carbolic, the pains subsided; thus giving one more proof of the sedative powers of this most valuable acid.

A great deal of the inner coating of the uterus, and no doubt part of the usual œstral products, if not even part of the incipient decidua, came away with the thin fluid at first, and also during these and the subsequent injections of Sol. Acid. Carbolic.

I am glad to say that, at the time I write this, the quey has evidently made an excellent recovery, for she is now eating well and getting into good condition.

THE DOG DISEASE, OR CANINE MADNESS OF THE ARCTIC REGIONS, VIEWED IN CONNECTION WITH HYDROPHOBIA; TOGETHER WITH THE MEASURES USED AND SUGGESTED FOR ITS EXTINCTION, FROM INFORMATION COLLECTED, AND OBSERVATIONS MADE IN THE COUNTRY.

BY THOMAS COLAN, M.D., DEPUTY INSPECTOR-GENERAL OF HOSPITALS AND FLEETS; FLEET-SURGEON IN THE LATE ARCTIC EXPEDITION.

THE Greenland or Esquimaux dogs are more like wolves than dogs, indeed they are supposed to be domesticated wolves. They are the "horses" of the Esquimaux, without which the latter could scarcely live; they are capable of enduring great cold and much deprivation of food. These animals travel long distances, and carry heavy weights. Now these dogs are subject to a kind of madness, much resembling Rabies, though differing from it in some marked particulars. The disease broke out about the year 1859, and spread over nearly the whole of the Inspectorate of North Greenland. It appeared all the year round, especially so in spring; it was violently contagious between dog and dog, and was also supposed to be so between the dog and fox; foxes having been thought to have communicated it to the dog, as they have been seen affected with the complaint. The virus is supposed to reside in the saliva, which flows from the mouth and nostrils, and this can be propagated by means of deglutition, absorption through the skin, and by inoculation through a bite or otherwise. As far as I could ascertain, no human being was affected with true Hydrophobia from the bite of the dog, though the natives have a great horror of being bitten, notwithstanding they sometimes use the skin, and even eat the carcase of infected animals occasionally. The disease caused much havoc amongst the dogs for several years. Medicine seemed to be of little avail in the treatment, and at length the Danish Government found it necessary to issue directions in the Danish and Esquimaux languages, how to deal with the disease, which in reality amounted to "stamping out," and thorough disinfection of harness, feeding

utensils, sledges, and even the ground on which the dogs had lain, by chloride of lime, and carbolic acid; the carcases were to be taken out and buried at sea, or burnt. Separation of the infected dog, and excision or cauterization of the diseased part might be useful, but if many dogs were affected, the whole pack may be destroyed.

The disease gradually declined in extent and virulence. It may have been a form or modification of this sickness which attacked the dogs in Dr. Hayes' expedition to Smith's Sound in 1866-67, and those also in the *Alert* and *Discovery* in Captain (now Sir George) Nares' expedition in 1875-76, further north into the great frozen sea. Doctors Kane, Hayes, and Ninnis, state that they each had a case of true Hydrophobia in the dog. From observation and *post-mortem* examination, no reliable cause was found for the complaint, but in all cases examined the autopsy revealed a "pitchy" substance in the intestines, and ulceration for four inches on either side of the ileo-cæcal valve. Symptoms were, on the whole, much the same as in the dogs further south, but there was some difference as to length of attack, etc. Medical treatment in the English Expedition appeared to have some effect; but "stamping out" was, in some cases, adopted, and it may be necessary in the future to resort to such again. Is it not possible that the dog disease of the Arctic Regions is but ripening Rabies, which to the southward of 70° north shows itself in the Rabies which causes Hydrophobia? or is it that Hydrophobia is modified in passing through the bodies of carnivorous animals going north, such as foxes and wolves, and becomes the disease we see in North Greenland? It is worthy of note, that when Rabies first appeared in some countries it was less virulent than after a number of years: if so, might it not now be ripening in Greenland? At all events, we must try to prevent its spread; the fact that some persons bitten by rabid dogs suffered no evil effects is no proof of its not being Rabies, for many persons bitten in more southern latitudes by mad dogs have escaped.

ON A HORSE DISEASE IN INDIA KNOWN AS "SURRA," PROBABLY DUE TO A HÆMATOZOON.

BY G. EVANS, M.D., M.R.C.V.S., ARMY VETERINARY INSPECTOR, INDIA.

(*Continued from page* 200.)

APPENDIX D.

Case 4.—*Experimental. Reg. No.* 337. *Gr. Horse* (*entire*). *Aged* 19.

September 23*rd*, 1880. *Morning.*—Having found the parasite in the blood, and watched its movements, I could have no doubt that it was most intimately related to the disease, if it was not the immediate cause of it. It became necessary to prove whether the disease could be transmitted to a healthy horse by inoculation. There was no evidence which I could find to show that it is contagious by ordinary means. This horse was therefore placed at my disposal for the experiment. I examined the animal carefully, and found him in good health ; he was one of the horses soon to be cast for old age, and worn out. The temperature of the rectum 100°. I examined the visible mucous membranes particularly, and found them of a normal colour. Examined the blood also, and found it free from parasites, and healthy in appearance. Blood was drawn from the jugular of case 2 (dun gelding, Appendix B), and immediately (before it coagulated), with an ordinary hypodermic syringe, I injected three separate drachms beneath the skin of this horse, in three separate places, in the lower part of the neck. This blood contained the parasite in abundance. *Evening.*—Temp. 101°.

September 24*th*. *Morning.*—Temperature 103°. *Evening.*—Temperature 99°. This observation was repeated.

September 25*th*. *Morning.*—Temperature $99\frac{3}{5}°$. Blood examined for parasites, none found ; appears healthy. *Evening.*—Temperature $101\frac{20}{5}°$.

September 26*th*. *Morning.*—Temperature 100°. *Evening.*—Temperature 103°.

September 27*th*. *Morning.*—Temperature 102°. *Evening.*—Temperature 105°. The mucous membranes are approximating in appearance to the dirty yellow peculiar in Surra ; the eyes moist, and a very small purple speck on the membrana nictitans. Two salootries most experienced in this disease say they suspect the case is Surra, though they are not yet sure of it. The horse

feeds well. Urine specific gravity 44, alkaline, free from albumen, good colour. Blood not examined.

September 28th. Morning.—Pulse 40; respirations 10; temperature $104\frac{30}{5}$°; urine specific gravity 40, alkaline, free from albumen; eyes more suffused. *Evening.*—Pulse 48; respirations 28; temperature $106\frac{70}{5}$°; urine specific gravity 44, colour normal, free from albumen. Œdema of the hind legs. Petechiæ on the near eyelid very marked. Blood not examined. Salootries have no doubt the animal has Surra.

September 29th. Morning.—Pulse 38; respirations 11; temperature $103\frac{20}{5}$°. Blood examined; parasites found swarming, and very active. Urine specific gravity 48, alkaline, no albumen, colour normal. *Evening.*—Pulse 42; respirations 33; temperature 105°. Fed up during the day.

September 30th. Morning.—Pulse 42; respirations 8; temperature $103\frac{20}{5}$°. Œdema increasing in all the four legs. Petechiæ very marked on membrana nictitans of both eyes. No evening observation.

October 1st. Morning.—Pulse 44; respirations 10; temperature $103\frac{30}{5}$°. Slight œdema of the sheath. Urine not examined. No evening examination made of this case, for I had too much work with a *post-mortem* examination, and with horses coming in from outposts.

October 2nd. Morning.—Pulse 44; respirations 8; temperature $103\frac{40}{5}$°; urine specific gravity .34, has no albumen. Fed yesterday six pounds grain. The animal has lost condition remarkably since the commencement of the experiment.

So far I have watched all the cases of Surra without any complication by the effects of medicine. Now I purpose making the experiment of giving carbolic acid as a remedy to this, and a few others which I shall select as being most favourable for recovery. I would not have selected this case if he had got the disease in the ordinary way, because he is so old, and at this stage of the disease, being so much reduced in condition since he was inoculated, there appears to be no chance of his recovery; still, as he has got the disease in this unusual manner, it is desirable to see what effect carbolic acid may have upon him as compared with others. Let him have three drachms of carbolic glycerine (1 to 4) in a pint of water, morning, noon, and evening.

October 3rd. Morning.—Pulse 44; respirations 10; temperature $103\frac{10}{5}°$. From this date I was not able to examine the urine, excepting watching whether the carbolic acid affected its colour.

October 4th. Morning.—Pulse 44; respirations 14; temperature $102\frac{20}{5}°$. Œdema increasing. Fed well yesterday, eight pounds grain, besides grass.

October 5th. Morning.—Pulse 44; respirations 10; temperature $100\frac{30}{5}°$. Fed well yesterday. Increase dose of carbolic glycerine to four drachms, three times a day.

October 6th. Morning.—Pulse 44; respirations 10; temperature $101\frac{20}{5}°$. Feeding well.

October 7th. Morning.—Pulse 43; respirations 10; temperature $101\frac{40}{5}°$. Feeding well.

October 8th. Morning.—Pulse 46; respirations 13; temperature 104°. Feeding well.

October 9th. Morning.—Pulse 40; respirations 10; temperature 101°. Feeding well.

Examined the blood, and found the parasite active, and many in the field of the microscope. The carbolic acid appears to have had no effect upon them yet. Increase the dose of the carbolic glycerine, six drachms, three times daily.

October 16th. Morning.—(I returned from the outposts last night, which accounts for no entry having been made of this case since the 9th.) Pulse 46; respirations 12; temperature $102\frac{4}{5}°$. Œdema less. Conjunctiva and mucous membrane generally more pale and anæmic. The petechiæ continue. Reported to have fed well during the last week, eight pounds of grain daily, besides grass; but he is reduced to a miserable condition, so thin compared to what he was at the commencement of his illness. After much search, found one parasite only in a drop of blood. White corpuscles normal. A great number of small ill-shaped particles of red corpuscles, with a quantity of granular matter in the serum. Increase the dose of carbolic glycerine to one ounce, three times a day, for one week, unless it should produce some marked ill-effects, or cause the urine to become very high-coloured. The urine appears normal now. At the end of the week, if not sooner, discontinue the acid.

Here my own observation of the case ended.

Remarks.—It should be noted in this case that, though the

subcutaneous injection of blood from a horse suffering from Surra produced the like constitutional disease in the horse so inoculated, yet there was not the slightest local irritation produced at the points punctured by the syringe no one could ever tell after the operation where it had been performed, from any local marks.

P.S.—Since the above was written I have been informed that the horse died an the 29th October.

Appendix D.

Table showing Variations in the Pulse, Temperature, and Blood, etc., Case 4. Inoculated by subcutaneous injection, 23rd September.

Date. 1880.	Morning or Evening.	Pulse.	Temperature of Rectum.	Blood, etc.
Sept. 23.	M.	Normal.	100	Normal.
,, 23.	E.	—	101	Blood not examined.
,, 24.	M.	—	103	Ditto.
,, 24.	E.	—	99	Ditto.
,, 25.	M.	—	$99\frac{3}{5}$	Normal.
,, 25.	E.	—	$101\frac{2}{5}$	Blood not examined.
,, 26.	M.	—	100	Ditto.
,, 26.	E.	—	103	Ditto.
,, 27.	M.	—	102	Blood not examined. Eyes suffused. Membranes slightly yellow with petechiæ.
,, 27.	E.	—	105	
,, 28.	M.	40	$104\frac{3}{5}$	Blood not examined.
,, 28.	E.	48	$106\frac{2}{5}$	Œdema commenced.
,, 29.	M.	38	$103\frac{2}{5}$	Blood examined. Parasites swarming.
,, 29.	E.	42	105	Blood not examined.
,, 30.	M.	42	$103\frac{2}{5}$	Ditto.
Oct. 1.	M.	44	$103\frac{3}{5}$	Ditto.
,, 2.	M.	44	$103\frac{4}{5}$	Ditto. Treatment with carbolic acid commenced.
,, 3.	M.	44	$103\frac{1}{5}$	Ditto.
,, 4.	M.	44	$102\frac{2}{5}$	Ditto.
,, 5.	M.	44	$100\frac{3}{5}$	Ditto.
,, 6.	M.	44	$101\frac{2}{5}$	Ditto.
,, 7.	M.	43	$101\frac{4}{5}$	Ditto.
,, 8.	M.	46	104	Ditto.
,, 9.	M.	40	101	Many parasites in blood, active.
,, 16.	M.	46	$102\frac{4}{5}$	One parasite found. White corpuscles normal. Great number of ill-shaped red particles and granular matter in serum.

Note.—The abnormal increase of temperature and pulse in the evening

Appendix E.

Case 5.—*Experimental.*

September 29th, 1880, *Evening.*—When the disease Surra appeared in case 4 (Appendix D), some ventured to doubt it was due to the inoculation, because there was a firm belief prevalent in the district that the seeds of the disease are always taken in during the hot season and lie dormant for many weeks, though I could find no good reason for that opinion. It was also believed that no horse got the disease at Dera Ismail Khan, if he had not been at one of the outposts during the previous twelve months some time. This was a very loose opinion, for every horse of the regiment had to take its turn of outpost duty during the year. The opinion arose in this way :—The disease appeared to prevail mostly at certain outposts ; then on reflection it was discovered that nearly all the horses had been there some time or other ; therefore it was concluded the disease was dormant in them since then. As the horse Regimental No. 337 (case 4) had been on outpost duty within six months past, it was suggested that he had the germs of the disease in his system ever since, which only developed now as a coincidence with the inoculation, and not as a result of it. I considered this objection as entirely without reasonable foundation, but it was desirable to settle the question beyond dispute. I therefore obtained a pony aged ten belonging to one of the officers of the 4th Punjab Cavalry, for the experiment. The pony was in good health in every respect, except that he suffered from a form of *Locomotor Ataxy*, commonly called in India "*Kammari*," from which he was not likely to recover. I examined the blood, and found it apparently healthy and free from parasites ; examined the visible mucous membranes, and found them of a healthy normal colour ; so that there was not the slightest sign of anything like Surra about him. He was, moreover, in a good condition as regards muscles, skin, etc., for a horse out of work, and he had not been out of the station within the past twelve months or more. It was therefore considered in every way a good subject for this experiment. Blood was drawn from the jugular vein of case 4 (Appendix D), and three separate drachms of it injected as soon as

possible, with a hypodermic syringe, into three separate parts of the neck. The pulse of the pony this morning was 40, and the temperature 99$\frac{3}{5}$°. This evening, just before the inoculation, the temperature was 100$\frac{2}{5}$°, pulse 44. I may remark that I find about one degree difference in temperature, morning and evening, common in healthy horses.

September 30th. Morning.—Pulse at the jaw almost indistinct ; heart pulse very intermittent and irregular, about 35 or 40 (made out by auscultation) ; temperature 97$\frac{1}{5}$° (this observation was repeated). Blood examined under the microscope, found normal. Slightly off feed.

October 1st. Morning.—Pulse as yesterday ; temperature 99$\frac{2}{5}$°. Feeding well.

October 2nd. Morning.—Pulse 40, intermittent, but not so irregular ; temperature 100$\frac{3}{5}$°. Feeding well.

October 3rd. Morning.—Pulse same as yesterday ; temperature 101$\frac{4}{5}$°. Eyes suffused. Feeding.

October 4th. Morning.—Pulse 44, not intermittent, quite full and distinct at the jaw ; temperature 104°. (This observation was repeated) Visible mucous membranes becoming of a dirty yellow colour, such as is characteristic in Surra. Petechiæ of the conjunctiva. Blood examined, and the parasites found swarming in it and very active. They are more slender and transparent than they are in advanced cases. It is now only four and a half days since the inoculation. Feeding well.

October 5th. Morning.—Pulse 46, not intermittent ; temperature 133$\frac{1}{8}$°. The appearance of the eyes is very characteristic of Surra. Feeding well.

October 6th. Morning.—Pulse 56, almost indistinct at the jaw but not intermittent. Visible mucous membranes are very yellow. There is no œdema, except of the eyelids. Temperature 103°. Feeding well.

October 7th. Morning.—Pulse 44 ; temperature 100$\frac{4}{5}$°. Feeding.

October 8th. Morning.—Pulse 45 ; temperature 99°. Feeding.

October 9th. Morning.—Pulse 44 ; temperature 100°. Feeding.

October 16th. Morning.—I was absent during the past week, visiting outposts. I am told the pony has continued to feed well,

but he has been much reduced in condition since he was inoculated. Pulse 40; temperature 100$\frac{1}{5}$°. There is hardly any œdema of the legs. The visible mucous membranes are of a dirty yellow colour, with petechiæ continuing on the conjunctiva. Blood examined; the parasites found swarming, but the corpuscles are not abnormal in any way.

October 18th. Morning.—Though this pony was not so much reduced as the others which I destroyed for *post-mortem* examination, yet there appeared no hope of his recovery, and he was already useless from the "Kammari" before the inoculation. I am concluding my observations there to-day, and purpose returning to Simla to-morrow, therefore I had this case destroyed now in order to examine him after death.

There was slight effusion of clear serum in the abdominal cavity, and fluffy deposits of lymph on the parietal peritoneum. No sign of inflammation. The liver, kidneys, spleen, heart, and lungs were healthy, as were also the stomach and the intestines which were opened and examined throughout.

Remarks.—This case has fully confirmed the experiment of case 4, with regard to the disease being communicable by the subcutaneous injection of the blood containing the parasite, and it even more strikingly illustrates the short stage of incubation. The parasites were found swarming in the blood of this case, and the visible mucous membranes assuming the appearance peculiar to Surra, four-and-a-half days after the inoculation. The next point of note is the shock the nervous system received a few hours after the inoculation, as shown by the intermittent pulse, the difficulty of feeling the pulse except at the heart by auscultation, and the lowering of the temperature. It is surprising how little the appetite was affected, and how rapidly the animal wasted, while he ate as well as he did in health.

No local irritation followed where the hypodermic syringe punctured the skin in the operation of inoculating.

APPENDIX E.

Table showing Variations in the Pulse, Temperature, and Blood, etc., Case 5. Inoculated by subcutaneous injection, 29th September.

Date. 1880.	Morning or Evening.	Pulse.	Temperature of Rectum.	Blood, etc.
Sept. 29.	M.	40	$99\frac{3}{5}$	Normal.
„ 29.	E.	44	$100\frac{2}{5}$	
„ 30.	M.	35 to 40	$97\frac{1}{5}$	Blood normal. Pulse very intermittent, and indistinct at the jaw.
Oct. 1.	M.	35 to 40	$99\frac{2}{5}$	Blood not examined. Pulse as yesterday.
„ 2.	M.	40	$100\frac{3}{5}$	Ditto. Pulse more regular.
„ 3.	M.	40	$101\frac{4}{5}$	Ditto, ditto. Eyes suffused.
„ 4.	M.	44	104	Pulse not intermittent ; full and distinct at the jaw. The mucous membranes becoming yellow with petechiæ. Blood examined ; parasites swarming.
„ 5.	M.	46	103	Blood not examined.
„ 6.	M.	56	103	Ditto. Pulse not intermittent, but almost indistinct at the jaw. Membranes very yellow.
„ 7.	M.	44	$100\frac{1}{5}$	Blood not examined.
„ 8.	M.	45	99	Ditto.
„ 9.	M.	44	100	Ditto.
„ 16.	M.	40	$100\frac{1}{5}$	Parasites in blood swarming. Corpuscles normal. Œdema of the legs.
„ 18.	M.	Destroyed.		

(*To be continued.*)

BURSATTEE.

BY J. FERRIS, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, ATHLONE.

As this disease has given rise to so many scientific theories, and as yet so much remains to be discovered, perhaps a few practical remarks may not be out of place.

I do not wish to reject the possibility of its being of a cancerous nature, or that it is due to the presence of a parasite ; but I am of opinion that it is an affection of the blood, caused by the

sudden change of weather from dry to wet in certain localities, and by the necessary change in the nutritive properties of the different grasses, the subject having a constitutional tendency to such a malady. Of course, this opens a very important question, viz., How to distinguish such animals ?

The reasons which strengthen me in the supposition that it is a blood disease are—

1st. The abundant discharge from the sores.

2nd. A change of climate will frequently arrest its progress.

3rd. Horses seldom contract this disease in the hills.

4th. The disease spreads rapidly immediately the rainy season sets in.

5th. When the rains are over the malady generally yields to the mildest treatment.

6th. The sores generally appear in the less vascular parts.

7th. The kunkur is evidently composed chiefly of the mineral substances of the blood, but undergoes certain changes when exposed to external influences.

8th. In its early stages it is somewhat analogous to prickly heat in the human subject, which also sets in with the rainy season.

I have found the less irritating agents the most efficacious, but first of all change the food, and give hay if procurable, attend to the condition, for although the animal may appear to be in perfect health, it is more than probable that debilitating influences are in operation ; good food is very important, and in some cases alterative and tonic medicines should be given. I have found Ferri sulph. of use, also Cupri sulph. locally; cover the parts, and be careful to keep a constant change of dry clothes.

Do not apply liquids in any form ; powders that will absorb the moisture I have found the best ; frequent applications of powdered wood charcoal are most useful from its absorbing and deodorising qualities, and I would also recommend animal charcoal and the acetate of lead.

My experience has led me to believe that it is not communicable. I may mention that I have had many cases, and that I have been successful in the treatment, although in several instances the disease has recurred.

I trust that by continuing the inquiry our scientific brethren will eventually discover diagnostic symptoms by which animals subject to the disease may be distinguished before any of its traces are left on them, and also arrive at other pathological causes. All speculative theories will assist in attaining this object.

Editorial.

COMPARATIVE PATHOLOGY.

THE wonderful strides which have been made within the last few years in the domain of pathology, and especially the very successful inquiries into the causation and prevention of infectious diseases, has at length attracted attention to the study of comparative pathology—a subject the importance of which we have urgently insisted upon, and largely dealt with, for now some twenty years, but which has been sadly and unwarrantably neglected in this country. On every side there is a sudden awakening to the immense advantages to be derived from the investigation of disease in animals, whether it be naturally or artificially produced; and there is every probability that, in the future, this interest in the almost new branch of medical science will assume a tangible character, in the institution of chairs of comparative pathology at the medical schools, or at least in our universities, as in France, Germany, Italy, and Belgium.

It cannot be denied that the startling disclosures which have been made, and especially recently, with regard to the action of germs in the production of most serious disorders, and the modifying of these same germs, so that by their introduction into the animal body they may safely protect it from these disorders—making them their own antidote, as it were—have been greatly due to our continental colleagues, and especially those in France, among whom Chauveau holds the earliest and most distinguished place. The three veterinary schools in France, but particularly those of Lyons and Toulouse, have been most distinguished in furnishing earnest workers in this very fruitful field, and so adding to their already high renown, not only as teaching institutions, but also as centres of scientific research.

Nor has Germany been much behind, as the work done at the Berlin and Munich veterinary schools can testify. Veterinarians who have received a scientific training and are imbued with the true scientific *ésprit*, are the men of all others most competent to undertake investigations in comparative pathology; and that training and enthusiasm our colleauges across the Channel possess, and are now employing with such brilliant results as those enumerated by Dr. Cameron, in the address we publish elsewhere. With much sorrow we have to confess that we can only congratulate, not emulate them in their splendid achievements, which have given them world-wide and well-deserved fame. It may happen

that some day, under another dispensation, the veterinary profession in these islands may be able to produce as successful seekers in science; and until that time arrives we are still at liberty to admire and felicitate our *confréres*, who are moved by the proper spirit, and receive the necessary encouragement to work.

In the meantime a small beginning has been made by the Pathological Society of London, which has instituted a standing Committee of Comparative Pathology to investigate the diseases and injuries of animals, and of which at least one veterinary surgeon—the present President of the Royal College of Veterinary Surgeons—has been invited to become a member. This, be it remembered, is only a commencement, for no real benefit can be derived until the subject becomes an integral part of medical education, as it is now one of the most important sections of medical science.

MICRO-ORGANISMS AND DISEASE.*

THERE never has been a period since the days of Æsculapius during which so much has been accomplished to entitle medicine to take a place among the exact sciences as within the last ten or fifteen years. Up to that period, we knew diseases only as groups of effects. Of their causes we had no certain knowledge. As the methods of research adopted became stricter and more systematic, a mass of information was accumulated, pointing generally in one direction, and enabling more accurate hypotheses to be framed; but although, for years past, what is termed the germ-theory of disease has been generally accepted among scientific men, it is only recently that the organisms themselves have been identified; and it is only within a period to be reckoned by months, rather than by years, that their habits have been so exposed to us, that it is already in our power in many cases to isolate them from the living body, and cultivate them in artificial soils—to multiply, destroy, modify, weaken, or intensify them at pleasure. If, then, as is obvious, a correct knowledge of the nature and tactics of the foes we have to contend against, in our battle with those maladies which sap the health and life of mankind, is essential to the waging of successful war against them, there never has been a time when the physician could look forward with so much certainty as now to a speedy solution of many problems hitherto deemed inscrutable; or the man of science could anticipate with so much hope the possibility of triumph, not merely over individual cases, but over whole genera of disease.

I have, therefore, thought that I could not choose a more opportune theme for the address which, as President of the Health Department of this Association, I am called upon to deliver, than the light cast by recent discoveries upon the nature of virulent and infectious maladies, the practical account to which those discoveries have already been turned, and one or two lessons which they suggest in connection with the preservation of the public health.

The first idea to be grasped is that specific diseases are like specific forms of animal or vegetable life: they can be produced only by specific pre-existing germs or seeds. There is no such thing as spontaneous generation of the entities which cause disease, any more than there is of the innumer-

* An Address delivered in the Health Department of the Social Science Congress, by Charles Cameron, M.D., LL.D., M.P.

able forms of animal and vegetable life which make their appearance wherever a material suitable for their development is exposed to the atmosphere. We know that the air is full of floating living particles, ready to spring into activity whenever they may light upon a congenial soil. We know that in such numbers do they in many cases exist, that, present but the proper soil, and the appropriate germ inevitably finds its way to it. We know, on the other hand, that, but filter the air, purify it from such germs, and, without their intervention, no form of life can arise. It has long been suspected that the same was the case with certain specific diseases, especially with what are known as zymotic diseases. It has long been considered probable that the symptoms which constitute each particular malady in that class were due to the invasion of the system by some microscopic organism, which, multiplying itself within the living body, gave rise to the phenomena and constitutional disturbance which the physicians described as the disease. It has now been proved that this is so in a number of diseases where such an origin was never suspected ; so much so, that it may be taken as an axiom of medical science at the present moment that it is the case in every contagious and infectious disease, as well as in a number of diseases whose communicability is so masked that, up to the present, it has been generally believed not to exist.

Now, it is a remarkable illustration of the impossibility of foreseeing to what results any scientific investigation or discovery may lead, that the great advance recently made in our knowledge as to the causation of disease is to be traced to a very large extent to certain investigations made by a French chemist, M. Pasteur, with regard to fermentation. In the first place, it was through facts elicited in the course of these investigations that Lister first entertained the theory on which his system is based. At that time—now about fifteen years ago—it was known to the surgeon that the gravest laceration of tissue might occur under an unbroken skin without any danger of suppuration ; but that, if the skin were broken and the lacerated tissues brought into contact with the air, suppurative action, attended with great constitutional disturbance, was the dangerous and, it was believed, the inevitable consequence. The same difference was recognized with regard to wounds made in surgical operations, which were known to be almost certainly followed by suppuration if they were external, while the reverse was the case when it could be so contrived that the air should not reach them. Taking Pasteur's researches regarding fermentation and the allied subject of spontaneous generation in connection with these facts, Lister asked himself whether this difference might not be due to the disturbing fermentative action of invisible organisms borne to the surface of the wound by the atmosphere. If so, if these could be destroyed suppuration would be averted, and the fracture where the bone had pierced the skin might be repaired as easily as that where the skin remained intact; the incision made in amputating a limb would give rise to as little constitutional disturbance, and would heal as readily, as the internal cut which had been so contrived by the surgeon that no air could find access to it. The experiment was made. By careful use of carbolic acid the air-borne germs were destroyed, and the results followed for which Lister had ventured to hope.

Again, it was the remarkable practical results which had attended his researches on fermentation that induced the French Minister of Agriculture, in 1865, to select M. Pasteur to investigate the causes of the silkworn disease, which at that juncture threatened to extinguish one of the most important industries of France. For M. Pasteur knew nothing about the silkworm. Indeed, he tells us that up to that period he had hardly seen the insect. But having undertaken the work, he applied himself to it for five years with all his energy. The result was, as he had shown the wine-grower

how noxious fermentation might be guarded against, so now he showed the silk-producer how the silkworm could be regenerated and the disease stamped out. Previous observers had noticed, in the juices of diseased silkworms, tiny microscopic corpuscles, but of their nature, or the *role* which they played in the disease, nothing definite was known. To these M. Pasteur directed his attention. He soon ascertained that they were living organisms, which could be introduced into the insect's system through its skin, or in its food, and which, multiplying themselves in the silkworm's body, constituted the real cause of the malady. By watching their development M. Pasteur made this important discovery, that they take a considerable time to spread within the insect's tissues to such an extent as to do very much mischief. If a larva was not infected until it had completed a portion of its existence, the ravages of the disease had made comparatively little progress when it entered into the chrysalis stage. It spun an excellent cocoon, and for the purposes of the silk-spinner was as valuable as its healthy neighbour. If, however, it were reserved for the production of eggs, the corpuscle had, by the time it became a butterfly, made such progress within its body that it had penetrated even into the eggs it produced, and a greater or smaller proportion of these contained corpuscles. The silkworm which issued from an infected egg inevitably died before it could produce silk. But M. Pasteur observed that, even among the eggs produced by the most infected butterfly, a certain proportion were sound. Availing himself, then, of this fact, M. Pasteur devised a system whereby each silkworm was reared by itself under careful observation, and in conditions which would ensure the healthy insects against infection. The eggs of those that retained their health to the last—of insects, which, after they had laid their eggs, the microscope showed to be free from the disease—were found to produce a perfectly healthy race. By breeding only from such stock, by avoiding conditions favourable to the production of the disease from germs which might find their way from without, M. Pasteur showed that in a short time it would be possible to regenerate the race and entirely stamp out the disease. He showed, too, how, when circumstances did not admit of such elaborate precautions, a seed might be secured which, if not absolutely free from the disease, would still afford a very satisfactory crop. By a series of striking demonstrations, he converted the silk-grower to his views, and his services obtained the recognition, not only of his own, but of foreign Governments.

It is thirty years since Dr. Davaine discovered that, in the Splenic Fever of sheep and cattle—a terribly fatal disease, which continental writers identify as the plague sent upon the cattle of Egypt—a tiny microscopic organism, measuring the fraction of a thousandth part of an inch, was to be found in the blood ; and subsequent researches induced him to believe that this was the true cause of that disease. As time passed, other microscopic beings were discovered in the blood and tissues in other diseases. I will not trouble you with any attempt to describe the differences which these organisms present, for subsequent experience has shown that the most deadly may be undistinguishable from the most harmless by any detectable physical peculiarity. Like many of the lowest forms of vegetation, they exhibit movements, when viewed under the microscope, and multiply themselves with extraordinary rapidity, in certain circumstances by budding or subdivision like the yeast plant, and in others by the production of germs or spores. In 1876, Dr. Koch, a German physician, succeeded in isolating the little rod-like organism or bacterium which gave rise to the Splenic Fever of which I have spoken, and in cultivating it outside the animal body. Dr. Koch's success was of immense scientific importance, for, whereas it had before been impossible satisfactorily to observe the development or peculiarities of any of these organisms, or even to prove beyond possibility of cavil that it was they, and

not the organic media in which they were found, which when inoculated on other animals gave rise to the disease, it now became practicable to remove them from all possible contamination, and to prove that this or that organism was really the cause of this or that malady. Dr. Koch's discovery was rapidly followed up by that of Dr. Klein, who showed, by methods similar to those adopted by Koch, that the disease known as Pig-typhoid or Pig-plague was also the result of a microscopic organism which he succeeded in cultivating ; and, about two years ago, M. Toussaint, a veterinary surgeon of Toulouse, to whom I shall frequently again have occasion to refer, achieved a like success with the bacterium of Fowl-cholera. I may say in passing that this is a disease in no respect resembling Cholera, but, from the circumstance of its having ravaged the poultry-yards of France coincidently with an epidemic of human Cholera, it acquired that unfortunate title. M. Pasteur had been engaged for some time, at the instance of the French Government, investigating the causes of the Splenic Fever which annually wrought such havoc among the flocks and herds of France, and Toussaint's discovery at such a juncture naturally directed his attention to a disease presenting peculiar facilities for experiments, and possessing this feature in common with the Splenic Fever of cattle, that it had been proved to be of similar parasitic origin. Having once brought to bear upon this Fowl-cholera, then, his extraordinary scientific instincts and great experience, M. Pasteur was able, in February of last year, to announce to the French Academy of Sciences a series of discoveries, which, followed up as they have been by himself and others, have completely revolutionised our ideas of the nature of diseases, and the proper methods of dealing with them. Within little more than a year and a half—thanks to the enterprise and emulation of French investigators—a new romance world of contagion has been opened up, peopled with innumerable microscopic races, which every week shows to be more and more susceptible to human domination and control, but many of which are—till tamed by science—so fatal to mankind, that the slightest carelessness on the part of the experimenter, the accident of a scratch on the hand, might any day entail upon him a rapid and appalling death.

But to return to the bacterium of Fowl-cholera. The vehicle of cultivation employed by Toussaint not proving satisfactory, M. Pasteur's first care was to find a more congenial medium, and this he soon discovered in chicken-soup. If the point of a needle be dipped in the blood of a fowl suffering from Chicken-cholera, and then placed in a vessel containing pure chicken-soup, from which care has been taken to exclude all contamination by air-borne germs, and a suitable temperature be maintained, the bacterium or microbe—as M. Pasteur terms it and cognate organisms—multiplies itself exceedingly, rendering the liquid turbid by its presence. If, after this process has gone on for some days, a drop of the contents of this vessel be transferred to another portion of similar chicken-soup, it, too, speedily becomes permeated with the organism. The process may be repeated a hundred times, and the result inoculated upon fowls, or given them in their food, will produce the same fatal effects. But if, instead of carrying on these fresh cultivations at intervals of a few days, you allow the infected chicken-soup to lie over for a few weeks or months, Pasteur discovered that an extraordinary change occurs. The malignant powers of the bacterium diminish ; it becomes, so to speak, tamed, or, as he terms it, "attenuated." A given quantity of infected chicken-broth, even at the hundredth rapid cultivation, inoculated upon twenty chickens, would, let us say, prove fatal to eighteen of them. If the same infusion were allowed to remain exposed to the oxygen of the air for a month, it would be so far attenuated that it would only prove fatal, say, to ten. Exposure for another month would render it

still less virulent, so that it would only prove fatal to two or three; while, after exposure for six or eight months, it would not prove fatal in a single instance. But does it still retain any active power? and, if so, what relation does it manifest to the original disease? In its most attenuated form, the bacterium gives rise only to trifling local symptoms, not at first recognisable as bearing any affinity to the deadly Fowl-cholera, and consisting of a small local slough. But the extraordinary and valuable fact discovered by M. Pasteur is, that the tamed and attenuated organism works upon the system a change protective against subsequent attacks of Fowl-cholera, exactly similar to that which had been remarked to be enjoyed by fowls that had recovered from the virulent form of the disease.

Here, then, is a result exactly analogous to that experienced in the protection exercised by vaccination with Cow-pox against subsequent attacks of Smallpox, only in the one case the protective virus has been elaborated in the laboratory of nature, in the other in that of art.

Time will not permit me to do more than allude to one or two of the many curious and interesting features elicited in M. Pasteur's researches as to the life-history of this parasite. One most important fact elicited is this, that, altogether contrary to what one would expect, the most virulent organism is to be found, not in the ordinary rapidly fatal cases, where the fowl dies in the course of a few days, but in a much rarer form of the disease, where the bird lingers for weeks or months. Then the microbe acquires such virulence that the fraction of a drop of blood charged with it, inoculated on a score of hens, will kill every one of them within four-and-twenty hours. And yet even this doubly poisonous species of the organism can be reduced to a harmless vaccine by artificial cultivation, and between its most and least deadly form the microscope does not enable us to detect the smallest difference.

What is the theory of the protection which this new vaccination affords? I will not enter into the details of the theories which have been advanced; suffice it to say, that the world has long been familiar with the fact that one occurrence of a certain disease—such as Smallpox, Measles, Scarlatina, Typhus, etc.—in an individual, effects a change in the constitution which, except in very rare instances, is protective against any recurrence of the same complaint. Recent discoveries prove that in certain instances a similar change is effected by diseases not identical with those against which they protect. Thus, Pasteur has found that inoculation with Fowl-cholera renders at least one class of animals refractory against subsequent inoculation with Splenic Fever, although the organisms which give rise to the two diseases are entirely distinct. But, in the course of his researches into the mechanism of the protection thus conferred, M. Pasteur discovered a very curious and interesting fact. One of the most prominent symptoms of ordinary Fowl-cholera is an irresistible drowsiness which overcomes the fowl attacked. It lies down, falls asleep, and is with difficulty awakened, only to sleep again until, finally, death overtakes it. Well, M. Pasteur, in the course of his researches, filtered some chicken-broth in which the disease-organism had been cultivated, so as to free it from all traces of it, and injected the liquid into the circulation of healthy fowls. After a short time, they exhibited the same symptoms of overpowering sleepiness, and that whether they had been rendered proof against the disease by previous inoculation or not; but, instead of dying after four or five hours, the symptoms passed off, and they were restored to perfect health. This proves that, in the course of its development, the organism of Fowl-cholera, by a fermentative action, gives rise to a narcotic poison which occasions this symptom, a symptom which masks the essential phenomena of the disease, but which can be altogether separated from it, and is only indirectly

incidental to it. In the Typhus Fever of man, a similar symptom is constantly noted, and the question naturally presents itself, Is it produced in a similar way? Here is a curious fact bearing on the point. In Senegal, the natives are subject to a terrible disease known among them as *nelavan*. The disease takes eighteen months or two years to run its course. It is attended with acute pain, stiffness of the limbs, glandular abscesses, and notably with constant drowsiness, the sleep being heavy, and accompanied with terrible dreams. The patient preserves his appetite to the last, but often loses his reason, and invariably dies. A French missionary in Senegal addressed a communication on the subject to M. Déclat, a French physician, and an ardent disciple of Pasteur's, who, suspecting in the disease a parasitic origin, recommended the missionary to try a treatment having for its object the destruction of the organism—its probable cause—by the injection into the circulation of phenic acid. The experiment was made in several cases, notably in one where the patient was in so advanced a stage of the disease, that the missionary was only induced to try the treatment by reflecting that if it did no good, it could do no possible harm; and in every instance the result was success. The organism was killed, and the patient recovered.

Turning now to the *Bacillus anthracis*, the organism gives rise to Splenic Fever in cattle. M. Pasteur found that it too could be cultivated in chicken-broth. In its case, however, a preliminary difficulty was experienced. The class of organisms to which the bacillus belongs multiply themselves in two ways—by subdivision of their cells into other cells, which rapidly attain the dimensions of the standard cells and, secondly, by a process analogous to flowering in the higher classes of plants, resulting in the production of spores or seeds. So tenacious of life are these spores in the case of the bacillus of Splenic Fever, that M. Pasteur has found them in full vitality in pits in which oxen and sheep that had died of the disease had been buried for ten years. He has proved, too, that when thus buried, swallowed by earth-worms in the soil from which these derive their nourishment, they are brought by them to the surface, and may thus give rise to fresh outbreaks of the disease. He found that this was the case in an instance where a bullock had been buried in a pit over six feet deep. His proofs were absolutely conclusive. He placed sheep on the ground, and they took the disease. He separated the bacillus-germs from the earth by washing it, and, multiplying them by cultivation, found that by inoculation they produced the disease. He found them especially in the casts brought to the surface by earth-worms, and in the contents of their digestive organs; and he found, further, that in districts where the soil was of such a nature that earth-worms were rare, the disease, when accidentally imported, was not found to spread. Here is an anecdote which curiously illustrates how scientific discoveries may come about. In 1865 Baron Seebach was Saxon Minister at Paris. Having suffered severely from Splenic Fever on his estate, he took great interest in the subject, and had evidently conversed with the French Minister of Agriculture respecting it. The result was that he was asked to detail his experiences in a memorandum. That memorandum the French Minister placed in M. Pasteur's hands, and it seems to have given him the clue to the manner in which the disease is spread. It has recently been published. In it the Baron narrates various circumstances which had induced him to think that his enormous losses from Splenic Fever were due to the propagation of the disease from the graves of dead animals. But what confirmed him in his suspicions was this: a sheep that had died of the disease had been buried in a corner of a field on which a crop of corn had subsequently been grown, and which the following year was sown with clover. The attention of the Baron had been accidentally directed to the place at the time; and one day, in passing, he

remarked that the clover had grown with exceptional luxuriance over the spot. A few days later, he noticed that some one had stolen the clover which grew at that corner of the field. The next day a woman on his property came to him weeping, to tell him that her goat had just died, and her cow was very ill. The disease was found to be Splenic Fever ; and the woman confessed it was she who had stolen the clover, and given it to the unfortunate goat and cow.

But to return to M. Pasteur and his experiments in cultivating the bacillus of this disease. He was not the man to allow himself to be foiled by the perversity with which this organism insisted, when artificially cultivated, on running to spores. He found that, by maintaining his chicken-broth at a temperature of about 110° Fahr., he could prevent spores from being developed, and induce the organism to multiply itself by subdivision, like its congener in Fowl-cholera. He found that, when this was accomplished, precisely the same results followed exposure to the atmosphere as had followed in the other case, but with much greater rapidity ; that the organism could be tamed ; that a virus could be produced of any desired degree of attenuation ; and that, when it was sufficiently attenuated, inoculated upon sheep or cattle, it gave rise only to trifling constitutional results, but at the same time wrought such a change in the system of the animal as protected it against subsequent attacks of Splenic Fever just as effectually as was known to be the case when an animal recovered from the natural disease.

The annual loss to France from Splenic Fever being close on a million sterling, the commercial value of this discovery was too great to allow it long to remain without a public test. In May last, at Melun, before a number of scientific authorities, fifty sheep were taken, twenty-five inoculated with the attenuated or tamed organism, and ear-marked, and the others left untouched. A fortnight afterwards the whole number were inoculated with Splenic Fever. On the twenty-five previously inoculated with the attenuated bacillus no result followed. As to the others, within fifty hours the whole number were dead of Splenic Fever. A similar public test undertaken in July exhibited precisely similar consequences. Since then many thousands of animals have been inoculated with the attenuated virus, and the commercial results of the experiment will soon speak for themselves.

But M. Pasteur has discovered that not only can this bacillus be attenuated, but that by a converse process it can be restored to its original virulence and ferocity. This *Bacillus anthracis* appears to be an organism of very cosmopolitan taste, so far as mammalia are concerned ; for though it is chiefly known to us as infesting cattle and sheep, it also, when accidentally inoculated on man, gives rise to that terrible disease known as malignant pustule. It lies hid in the condition of spores, in hair of horses and the wool of sheep that have died of the disease, and finding its way along with other dust to the lungs of the people who handle them, occasions another terrible malady, known as hairworkers' or woolsorters' disease, and it particularly affects the class of rodentia. In them this bacillus appears to find a most congenial home, and in them it flourishes with a deadliness peculiarly characteristic. Now M. Pasteur discovered that, if the attenuated bacillus—the organism tamed through long cultivation in oxygen—be cultivated through a succession of young guinea-pigs, it will speedily re-acquire all its original virulence. That this is not an isolated fact in the history of such organisms is shown by the circumstance that a similar re-crudescence can be effected in the case of the virus of Fowl-cholera, by repeated cultivations of the attenuated organism on small birds, such as sparrows, to which it proves fatal long after it has ceased to be capable of destroying the life of fowls.

I shall only refer to one other curious discovery made in the course of M. Pasteur's investigation. I relate it because it seems to cast some light on the success which has attended the treatment of certain Fevers to which mankind is subject, by cold affusions. M. Pasteur discovered that if you introduce the bacillus of Splenic Fever into the circulation of the fowl, under ordinary circumstances it produces no result. The temperature of the fowl's body appears to prevent its multiplication in the system. Cool down that temperature, however, by placing the fowl in water, and repeat the operation, and the disease at once manifests itself. Let the temperature rise, the organism perishes, and the fowl revives. And here I shall for the present leave M. Pasteur, and briefly recapitulate the results obtained—most of them, be it remembered, within the last few months—by other labourers in the same field.

There is another disease of cattle equally fatal in its results with Splenic Fever, but distinct from it, and known amongst French veterinarians as *charbon symptomatique*, or from the name of the author who first described it, *la maladie de Chabert*.* Now M. Chauveau—to whose researches I have before referred—had proved that very different results followed on the introduction of certain morbid viruses into the animal system, according as they are carried right into the blood by injection into a vein, or simply introduced into the tissues outside the circulation. More recently, in investigating the strange resistance displayed by Algerian sheep to the power of Splenic Fever, M. Chauveau found that it could be overcome by the introduction of large amounts of the specific organism into the system. By carefully limiting the number of bacilli introduced, however, he found he could give rise to a trivial infection which increased the natural resistance of the animal to subsequent experimental inoculation with the disease. Working on the lines thus disclosed, three young veterinary surgeons of Lyons, MM. Arloing, Cornevin, and Thomas, discovered that if the micro-organism which gives rise to the *maladie de Chabert*, and which can also be artificially cultivated, be injected in carefully graduated doses into the torrent of the blood, so that the tissues shall not be contaminated, it gives rise to but very trifling constitutional disturbance, but at the same time produces a change in the system of the animal which effectually protects it against subsequent attacks of the disease. The discovery was publicly tested at Lyons in June last, and it, too, the French Government are now engaged in testing on a large commercial scale.

Let us now turn to another disease, which is probably the last in the world that you would suspect of being due to a parasitic organism—Rabies, or Hydrophobia. M. Pasteur has been working at it for some time past, and he has made some extraordinary discoveries. Among other things, he has found that the saliva of a boy who died of that disease contained organisms which could be cultivated artificially ; and that the results inoculated on rabbits produced a disease which proved fatal with startling rapidity, but was quite distinct in its symptoms from any known form of Hydrophobia. M. Pasteur considers this to be a new and distinct disease, but as yet no practical result of his investigations has been published. Meanwhile, M. Galtier, another veterinary surgeon of Lyons, who for years past has made a special study of Rabies, adopting a hint from the result of the investigation of his colleagues with respect to the *maladie de Chabert*, tried the effect of introducing the virus of Hydrophobia into the torrent of the blood by injecting it into the veins of a number of sheep and goats. To his delight he found that the same results followed the practice which had attended it in the *maladie de Chabert*. Animals which received the virus directly into their circulation,

* The so-called Black-quarter of cattle.—Ed. *V. J.*

not only did not suffer the least inconvenience from it, but, when subsequently exposed to repeated inoculations of hydrophobic virus, it produced on them no effect; while unprotected animals, subjected to the same tests, invariably succumbed to the disease. Hydrophobia, communicated in the ordinary way, is generally a long time before it takes a hold upon the system; and M. Galtier is at present endeavouring to ascertain whether, by stepping in with his intravenous inoculation in animals which have been bitten by rabid dogs, he cannot anticipate and neutralise the natural development of the disease, as we can the slower development of Smallpox infection by the more rapid action of vaccine lymph.

Another disease, which, until within the last few years, was in this country believed to be absolutely non-contagious, is Consumption; and yet it, and the whole class of tubercular diseases to which it belongs, have been proved to be eminently infectious. They have been transmitted from man to the lower animals, and from one lower animal to another. For some time back, M. Toussaint has been engaged in investigating the subject. He tells us that a large number of the cattle sent to the slaughterhouses in France suffer from the disease, and that the presence of tubercles in their lungs is not considered to render them unfit for human food; and I believe that the position of Great Britain, in both these respects, will be found precisely similar to that of France. He found that, by feeding pigs with the lungs of such animals, he produced tubercular disease in them. He found further, that the juices of the muscles were permeated with the infection, and that they, too, were effective for the propagation of the disease. Further, within the last few weeks, M. Toussaint has announced to the French Academy of Sciences that he had succeeded in isolating and cultivating the microscopic organism which gives rise to Tuberculosis; and, after a series of cultivations in animal soups, had reproduced Tuberculosis with it on other animals. The important fact in connection with the organism is, that it can stand a high degree of heat without perishing, M. Toussaint having succeeded in inoculating the malady from juice expressed from the steak of a tubercular ox, cooked so as to be but slightly underdone. If this be true, it affords us a certainty of at least being able to limit the ravages of human tubercular disease, by directing our attention to what must be a most fruitful source of infection, namely, the sale of diseased meat.

Ague, again, has long been known to be associated with exposure to exhalations from marshy ground. Of late years it has been known that a microscopic organism—also a bacillus—was to be found in the blood of persons afflicted with the disease. Within the last couple of years, Dr. Klebs, a German who has done much work in this field, and Dr. Tomassi Crudelli, an Italian *savant* associated with him in the investigation, discovered that, by treating with water the soil of a fever-haunted marsh of the Campagna, the germs of an organism which flourished in the soil could be washed out; that germs of this organism floated—though in much smaller numbers—in the air which rested on the marsh; that, by shaking it up with water, they too might be washed out; and that, by repeating the operation again and again, an appreciable number of them might be collected from the air. Water, suspending the organisms thus obtained, introduced into the circulation of a dog, produced Ague more or less rapidly and more or less violent, according to the numbers in which the bacilli were present. This not only explains the nature of the danger encountered by persons exposed to emanations from marshy ground, but it shows why intermittent Fevers so frequently manifest a new activity after operations involving a disturbance of the soil; and it further renders apparent why it is that quinine, which is known to kill such organisms, is so invaluable a remedy and preventive against the effects of exposure to swampy malaria.

But *cui bono?* you may ask; of what advantage is all this knowledge when, without possessing it, quinine has for years been known to be the appropriate remedy? In many forms of malarial Fever the poison is too virulent, and the course of the disease too rapid, for routine medicine to be of any avail. But, guided by exact knowledge, you can go straight at the source of the mischief. With this object Dr. Déclat, to whom I have before referred, suggested the vigorous use of phenic acid, by injection into the veins and otherwise, as a means likely to prove effective against the organisms of Yellow Fever and kindred acute forms of malarial poisoning. The suggestion went out to Brazil, and in June last M. de Lacaille, a French physician resident in Rio, wrote home his experience of it. The first case on which he tried it was a young lady apparently on the point of death from the worst form of the disease, a fever attended with the fatal black vomit. In three days she was out of danger. "During the thirty years in which I have been employed in fighting Yellow Fever," writes M. de Lacaille, "this is the first patient whom I am certain of having snatched from death at such a period of the disease." In a dozen other cases the treatment was crowned with equal success; but in most of them, adds M. de Lacaille, "the cure was so rapid that, notwithstanding my long experience, I have asked myself if they could really have been Yellow Fever. Called in at the period of incubation, the triumph is easy."

Did time permit, I might quote other instances in which within the last few months the specific organisms which constitute the potential causes of diseases of mankind and the lower animals have been successfully isolated and cultivated in artificial media. I might tell you of the researches of M. Pasteur with regard to boils and puerperal Fever. I might describe the important discoveries of M. Talamon with respect to Diphtheria—how he has succeeded in isolating and cultivating the organism which occasions it—how he has shown that it can be conveyed from mankind to various domestic animals, and from domestic animals back to man; and how these facts explain many features in the history of diphtheric contagion hitherto inexplicable, and present to preventive medicine a new indication for the limitation of this terrible disease. I will conclude by briefly referring to two only of the numerous practical points which the history of the brilliant series of discoveries I have very inadequately sketched seems to me to suggest.

In the first place, it teaches in every line the necessity, from the standpoint of public health, of regarding every person suffering from an epidemic or contagious malady as a hotbed swarming with living organisms which cause and spread the disease. So long as these are confined within the body of the individual, the public—selfishly speaking—need not trouble itself; but when the organism commences to be eliminated from the body, when its spores in millions and hundreds of millions are sent forth by the skin or the intestines, then the danger to the community begins. We have seen how tenacious of life these disease-germs are, and we know that in many cases—as, for example, in Smallpox and Scarlatina—the stage of the disease at which the process of elimination is most active occurs when the patient is already convalescent. According to our present system, it is nobody's business to look after him at this period, and he is sent forth into the community to scatter disease-germs by the thousand wherever he goes. We spend enormous sums of money in endeavouring to cope with disease when it has broken out. It seems to me we might spend a little much more profitably in securing the destruction of its seeds. It should be the duty of the public sanitary authorities to provide convalescent homes for patients recovering from serious infectious diseases, where they might be taken care of until all danger of the propagation of infection by them had ceased

Were this duty attended to, the recent discoveries as to the nature and causation of disease, to my mind, leave not the smallest doubt that we might be spared many epidemics, and that one disease especially—I refer to Scarlatina—might be made to show a very different death-tale in our tables of mortality.

In the second place, the whole history of the chain of discoveries which have furnished the topic of this address seems to me to teach the enormous importance of the study of comparative medicine and pathology, not in their connection with human diseases alone, but as branches of a science affecting the whole animal and vegetable world. It was, as we have seen, Pasteur's researches on the pathology of ferments which led to Lister's application of his great principle to human surgery, and to the discovery of methods which promise to stamp out some of the most fatal diseases of flocks and herds ; it was to Jenner's observation of an eruption of the cow that we are indebted for the discovery of vaccination ; and it is their investigations into the diseases of domestic animals that has enabled the veterinary surgeons of France, within the last few months, to make such preponderating contributions towards the solution of questions vitally affecting, not merely those animals, but mankind. The University within whose walls we are now assembled has, by the institution of a new degree, acknowledged the importance of the study of State Medicine. If she would add to the many services she has already rendered to the cause of science, I would suggest that she could adopt no step of greater practical utility than the institution of a chair of Comparative Medicine and Pathology—a chair the duty of whose incumbent it should be to investigate and expound the most recent knowledge and discoveries as to the diseased condition of every living thing, and their bearings or probable bearings upon the diseases of mankind.

However this suggestion may be received, one thing is clear, unless greater prominence is given to such studies, this country can hardly hope to hold her own against her neighbours in the cultivation of medical science. And no greater misfortune could befall the nation. It is all very well for us here to discuss the administrative phases of public sanitation. Administration, when intelligent and active administration can be secured, is capable of much. There is much which enlightened legislation may still effect. But we must beware, while crying out for fresh enactments and extended powers, not to overlook the fact that throughout the kingdom those powers which the law already provides for the preservation of public health are but half enforced. After all, the law in such matters can only follow in the wake of science, and for its effective operation must everywhere depend on the diffusion of correct and exact ideas as to the cause of diseases and the modes of preserving health. Every year's experience, therefore, convinces me more and more that it is to the spread of scientific knowledge, rather than to Parliament, that we must look for the full development of preventive medicine ; that to the physician, rather than the statesman, we must appeal "to stand between the living and the dead, and stay the plague."

THE PATHOLOGICAL ANATOMY OF RABIES.

An important addition to the observations which have been made on the minute changes in the nerve-centres in Rabies has been published in the last number of Virchow's *Archiv*, by Kolessnikow, Professor at the Veterinary Institution at St. Petersburg. He has examined the brain and spinal cord of twenty dogs which died with unmistakable symptoms of the disease. In most of the cases the only naked eye changes which he found in the nerve-

centres were those of vascular hyperæmia, most marked in the cerebral and spinal pia mater. In some cases an œdematous state was also observed. The microscopical changes were similar in all the cases examined, the only differences being in degree. The alterations were localised in certain parts, and consisted of an infiltration of round elements such as has been described by many previous observers. The blood-vessels presented the chief morbid appearances. They were dilated and distended with blood. In some, especially the smaller veins, the lumen was occluded by white blood-corpuscles. The infiltration of the walls of the vessels with corpuscular elements, so constantly described, was found by Kolessnikow in all cases, and he believes that the process sometimes begins in the adventitia and extends inwards, sometimes in the intima, and extends outwards. The nuclei of the wall of the vessel were increased in size, and a proliferation of the endothelial cells could be clearly seen in the intima of the veins and capillaries. The connective-tissue cells in the adventitia also became proliferated and the sheath infiltrated with roundish corpuscles, which were accumulated also in the spaces between the outer coat and the muscular layer of the vessel, into which they ultimately spread, so that the whole thickness of the wall became thus ultimately infiltrated. Similar corpuscles were also found in the adjacent nerve-tissue. Hæmorrhages were found in many parts of the brain and spinal cord. Coexisting with these changes in the walls of the vessels, deposits of clear yellowish refracting substance were found between the endothelial cells, and between the adventitia and the inner coat, separating the tissue elements and narrowing the lumen of the vessel. They were often seen surrounded by the infiltrating cells. They were rarely seen within the lumen of the vessel. They were present immediately after death. They reacted to colouring agents, as albuminous substances or colloid bodies. They are believed to arise from the blood-corpuscles, on account of their occasional presence among the latter. Similar masses were found in the walls of vessels in other organs—*e.g.*, in those of the nerves, hypoglossal, vagus, sympathetic, etc., and in the liver, kidneys, lungs, heart, and spleen.

The changes were always found to be well marked in the cerebral hemispheres, especially in the parietal and frontal lobes, but much more slightly in the occipital lobe. They were found also in the corpus striatum and optic thalamus, especially in the layers beneath the ependyma of the lateral ventricle. In two cases small extravasations were met with. Infiltration of the walls of the vessels was found in all cases in the corpora quadrigemina and pons varolii, and with even greater intensity in the medulla oblongata. Around the nerve cells and capillaries of the hypoglossus, vagus, and spinal accessory nuclei accumulations of round cells were seen, some nearly a tenth of a millimetre in diameter. Small hæmorrhages were always found in the spinal cord. In the latter the infiltration of the walls of the vessels was almost uniformly present, and the spinal canal was usually plugged with a granular mass and surrounded by lymphoid elements. Large colloid-looking masses were present in most of the blood-vessels. The different intensity of the changes in different cases is ascribed to the degree of intensity of the poison, and especially to the duration of the disease. The changes described are for the most part the same as those met with in man by Benedikt, Coats, Gowers, and others ; but the observations are especially valuable from the number of cases investigated, and the demonstration which they afford of the uniformity with which these are met with in the rabid dog.—*Lancet.*

EQUINE DISTEMPER (*INFLUENZA ERYSIPELATOSA EQUORUM. FEBRIS CATARRHALIS EPIDEMICA* CONTAGIOSA EQUORUM*).

BY PROFESSOR DIECKERHOFF, BERLIN ROYAL VETERINARY SCHOOL.†

SINCE the spring of the present year, the equine population of France and Germany has been visited by an epizoötic, which, in the literature of the last few years, has been principally discussed under the title of "Influenza," or a particular form of Influenza.

Its character and nomenclature are subjects upon which professional men hold the most contrary views. In the hope of assisting to solve these difficulties, I venture to offer a few general remarks upon this disease to the readers of this journal.

The history of veterinary science shows the malady to be by no means a new one. Solleysel observed it in Germany in 1648. It was widely diffused over western Europe in 1688 and 1699. Great numbers of horses were affected in Europe in 1711 and 1712; again in 1732, as well as in 1767 and 1776. In 1786, breaking out afresh in Hanover, it gradually extended to Southern Germany and Italy. When in 1804 and 1806, it visited Denmark, Germany, Italy, and other portions of Western Europe, it received a great amount of attention from the veterinarians of that time. They bestowed upon it such names as, Influenza, Nervous Catarrhal Fever, etc. In the ever-memorable years of 1813 and 1814, the Russian army imported it into North Germany, from which circumstance it became known as the "Russian horse-sickness." The years 1824 and 1825 were characterised by its general distribution in France and South and West Germany. Girard designated it "Gastro-Entérite," whilst in Germany it was frequently spoken of as "The French-sickness." "Horse-typhus," "Pulmonal-typhus," and "Typhoid Influenza," are others of the many terms which it has at various times received. In 1851 North Germany, and especially Berlin, were once more the seats of its ravages. In the Austro-Prussian Campaign of 1866, it was very prevalent amongst the cavalry horses at Vienna. Röll described it as the "Catarrhal form of Influenza." In the autumn of 1869 it was observed in St. Petersburg, and in the beginning of the following year made its appearance at Dorpat and the neighbourhood, where it was studied by Jessen, who named it Influenza. Very soon afterwards the extensive transport of horses from Russia, consequent on the Franco-German war, was the means whereby it again gained access to Germany. Proceeding onward from east to west, it soon reached other parts of Germany, as well as Belgium and France. The horses of the occupation-army were for several weeks in the spring of 1871 the victims of its ravages, and as the German legions withdrew, it followed them to South Germany. England was the next country invaded, the horses especially in the large towns suffering severely in 1871 and 1872. When in 1872 it made its appearance in the New World, it created a great stir and sensation. To me it seems not at all improbable that the contagion was conveyed from England to Canada, where it first broke out. In a few weeks it had reached the principal towns of the United States, where the immense losses it occasioned soon attracted the attention of the press, whose accounts of the disease were in all probability greatly exaggerated. The *American Veterinarian* regarded it as a new disease, and described it as "Influenza," or as "Epihippic Fever." The German dailies soon came to speak of it as the "American horse-sickness."

From France we learn that the disease was very prevalent during the

* Epizoötica (?)—Translator.

† Translated from "Adam's Wochenschrift für Thierheilkunde und Viehzucht." September, 1881. By W. F. Garside, M.R.C.V.S.

early months of the present year, especially in the capital. The French veterinarians applied to it the terms "Gastro-enteritis," or "Gastro-hepatitis." During the previous month it broke out in Alsace, in Baden, and in Bavaria (Munich).

In Berlin it was noticed at the commencement of last June, since when it has spread to many large horse establishments, and at the present moment is still extending its area. The Berlin Omnibus Company possesses 1050 horses, stabled in five depôts, four of which the disease has gradually invaded. Up to the present time 497 horses have been affected, the greater portion being now, however, convalescent. Thirteen cases have terminated fatally. In several other large establishments the mortality has reached ten to fifteen per cent., in others the loss has been very trifling ; so that perhaps about five per cent. may be taken as representing the average mortality amongst affected animals.

In this short essay my intention is not to enter into a discussion as to the pathology of the malady. I shall content myself with saying that it is a specific, contagious, infectious febrile disease running an acute course. Its origin is always to be traced to contagion. Other causes take no part in its production. Infection results as a rule from the expired air of diseased or convalescent animals. It may, however, arise from a veritable transmission of the contagion by persons from diseased to healthy animals. After infection, five to six days usually elapse prior to the first symptoms becoming manifest. Convalescence occupies very often one to two weeks, relapses during this period, however, being by no means unfrequent. Those horses which at the commencement of the disease are taken off work, placed in suitable, well-aired stalls, and carefully attended to, have almost without exception the disease in a mild form ; whilst, on the other hand, horses which continue to be subjected to exertion, or are maintained in close overheated stables, invariably suffer to a much greater extent.

About ten per cent. appear insusceptible to the contagium, and fifteen to twenty per cent. of the affected ones suffer only slightly.

The following are the most important changes occurring in the organs of the body of an affected animal :—

1. *Fever*, in which the internal temperature rises from 103°, 105°, 106°, and even 107·2°. The external temperature is changeable, the coat stares, but shiverings (*Schüttelfrost*) or muscular tremblings are never observed.

2. *Myocarditis parenchymatosa*, which I regard as the most dangerous element in the disease, occasions an increase in the frequency of the pulse, which varies from 56 to 60 in mild attacks, to 90, 100, and 120 in severe ones.

3. *Superficial Catarrh of the respiratory mucous membrane*, with nasal discharge, slight tumefaction of the submaxillary lymphatic glands, and easily-induced cough.

4. *Erysipelatous inflammation of the Conjunctiva palpebrarum*, with œdematous infiltration, especially in the mucous folds between the cartilago nictitans and the bulb of the eye.

5. *Erysipelatous inflammation of the Gastric and Intestinal mucous membranes*, which disappears, as a rule, with the lowering of the febrile heat. The digestive mucous membrane is, during the first few days, œdematous and infiltrated with a yellow fibrinogenous fluid, to which the swollen condition is due. Peyer's patches are also involved in the swelling. In the very severe cases in which death takes place during the height of the fever the connective tissue of the mesenteries appears ædematous, and the abdominal cavity contains a yellowish fluid.

6. *Hepatitis parenchymatosa*, with extensive swelling, partial Icterus, fatty infiltration and degeneration of the liver substance.

7. *Myositis*, to which may be traced the *Prostatio virium* and the

unsteady gait often observed. Coupled with congestion of the lungs, it also occasions the frequent but not invariably increased frequency of the respiratory movements.

8. *Erysipelas phlegmonosum* of the extremities, and in males of the external genital organs. In mild cases this is, however, often absent.

9. *Congestion of the Brain and Spinal Cord.*—The kidneys and spleen are, as a rule, only slightly affected. Sometimes death takes place about the second or fifth day from the commencement of the disease, and is then the result of cardiac weakness, or in some cases cerebral paralysis. During convalescence, complications of a fatal nature often arise, the most frequent and serious of which is Broncho-pneumonia. Continuous intestinal inflammation (Diarrhœa) or Laminitis, during the second or third week, are likewise occasional causes of death ; whilst in some cases the animals perish from the enormous erysipelatous phlegmon in the subcutis and aponeuroses, or as a result of paralysis of the posterior extremities.

The foregoing characteristics will suffice to show the specific and contagious nature of this malady, as well as the fact that it has nothing in common with Pleuro-pneumonia Contagiosa Equorum. The view held by some authors that both diseases are different forms of primary disease (Influenza), is therefore untenable. But in Germany, for many years past, the Contagious Pleuro-pneumonia of horses has been spoken of as Influenza. It would, therefore, be devoid of purpose to apply the same term to the disease under consideration.

Now it may be suggested that it would be better, inasmuch as the Pleuro-pneumonia of horses has so many analogies with the Croupous Pneumonia of the human subject, as well as with the lung disease of cattle, to dispense with the word Influenza altogether, as applied to this disease, and speak of it simply as "Pleuro-pneumonia Contagiosa Equorum." Whilst acknowledging the justice of the principle, I feel bound, on practical grounds, to object to its adoption.

I therefore propose to the German veterinarians that we should name the present disease "Equine Distemper" (*Staupe der Pferde*), and retain for the other disease "Equine Chest-disease" (*Brustseuche der Pferde*). The word "Distemper," which in itself expresses nothing further than a "disorder," for scientific purposes can easily be limited to a specific disease. In medicine such words as Plague, Lues, Influenza, have come to be applied to special diseases of the human subject. That the word "Distemper" is already used to express a disease of dogs is no argument against my proposition. Human plague (*Die Pest der Menschen*) is another disease to Cattle-plague and no veterinarian would find any difficulty in conceiving "Equine Distemper" as a different disease to "Canine Distemper."

[Far from having been confined to the countries mentioned in the preceding lines, this malady has been exceedingly prevalent in this country, and especially in London, during the present year, and has not yet left us. From personal observation, I can testify to the identity of the disease here and on the Continent. It seems somewhat surprising that no communication should have been made to the journals in reference to its presence amongst us.

Professor Dieckerhoff will, I know, pardon my drawing his attention to the fact that Professor Williams has in this country already insisted on the difference between this malady and Epizoötic Pleuro-pneumonia of horses ; for in speaking of the latter in "Veterinary Medicine" (page 346), he says, "Erroneously called Influenza, it has seemingly and for some time taken the place of this affection, from which it differs very materially. The true uncomplicated Influenza is a disease of the mucous structures ; this affects the serous covering and substance of the lungs."

"Horse Distemper" is a term which has also already been applied to this disease in England —*Translator.*]

BRITISH NATIONAL VETERINARY CONGRESS.

THE Second Sitting took place on the afternoon of the 20th July, commencing at two o'clock.

The PRESIDENT called for the discussion on Mr. Meyrick's paper on "Soundness of Horses."

Messrs. PRESTON, of Mallow, and J. P. HEATH, of Exeter, having spoken shortly,

Mr. SANTY, of Norwich, addressed the meeting. After expressing his opinion that Mr. Meyrick's idea as to "the age at which bony tumours are liable to increase in size" was not definite enough, he proceeded to call attention to the difference between practical and legal soundness, dealing particularly with the condition of the hocks as an example. He next expressed the view that Bog Spavin seldom causes lameness in this country, and that an animal with one foot smaller than its fellow is unsound. External Melanosis he considered liable to internal complications.

After a few words from Mr. BOWER,

Mr. WM. HUNTING showed that in the case of any defect it is absolutely necessary for us to put in writing, or verbally state, that the animal is unsound. With regard to difference of opinion, there is no more of this among veterinary surgeons than among men of other professions, and there is more reason for such differences, for there are cases where no hard and fast rule can be made. The question of soundness and unsoundness must be settled for each individual case. We must remember that a horse is open to constant variations. With regard to a small foot, unless disease exists, either in advanced or initiatory stage, we have no right to say the horse is unsound.

Mr. W. SOUTH thought those "perfectly sound" horses of which we sometimes hear must be very sound indeed, and the gentleman who gave such certificates himself a model of perfection. He questioned the right of the veterinary surgeon to fix the price of the horse examined by him.

Mr. SEXTON, secretary to the Cart Horse Society, then drew attention to the difficulties he has experienced by some veterinary surgeons passing horses which have been rejected by others. He alluded especially to cases of Roaring and Sidebones.

Inspecting Veterinary Surgeon OWLES said: We must not discuss the law of soundness, for we do not make the law, and we are doubtful whether those who do would accept our conclusions. The Irish system of purchasing a horse subject to the opinion of a selected veterinary surgeon is best, as not tending to litigation. Theoretically we must decide: "Soundness, health; unsoundness, disease."

Mr. J. MOORE, of London, pointed out that enlargement of a bursa of the flexor metatarsi is frequently mistaken for Spavin. He also discussed navicular disease in relation to soundness.

Mr. E. STANLEY, of Warwick, showed that in these days of "horsey" men, it is principally in cases of doubt and difficulty that we are called in. He considered that in no case should the term "coarse hocked" be applied to a spavined animal, however good his action. The purchaser must be given our opinion, and may be left to act up to it or not. Many a horse is born with one foot smaller than its fellow, and therefore this condition must not lead to the rejection of an animal. Concerning Melanosis, certainly many horses live to a great age though affected by this disease.

Mr. T. H. SIMCOCKS, of Drogheda, then drew attention to the definition of soundness drawn up by the Dublin Section at one of its meetings: "In our opinion a horse may be said to be sound if he is free from any disease or congenital malformation."

Mr. WM. PALLIN, A.V.D., having had numbers of horses under observation in his regiment for several years, was able to state as a fact that many horses with hocks undoubtedly unsound from a theoretical point of view, never gave way in consequence of work. Except there is actual malformation, we are not justified in rejecting a horse for a small foot.

Mr. J. H. STEEL said that the terms "soundness" and "unsoundness" are, from the very nature of things, indefinite; therefore it is absolutely impossible to, as the lawyers think they have done, draw a line between soundness and unsoundness. For example, healthy hocks differ in structure to the extent of a difference in the number of bones. We have no exact information as to what is a Splint, and what is a Sidebone in one horse is normal conformation in another. We must fall back on the term "practical soundness" to meet all these difficulties, and must judge of each individual case. Vices of conformation are not to be mentioned in certificates.

Mr. R. WARD considered that the united opinion of a large number of veterinary practitioners would be appreciated and utilized by the legal authorities. The root of the evil known as difference of opinion among veterinary surgeons, is that some work according to the legal, and others the practical definition of soundness. Mr. Sexton's question about Roaring may be easily answered: "A roarer does not always grunt, and a grunter is not necessarily a roarer;" this is allowed by every member of the profession.

Mr. SAMSON, of Mitcham agreed with the suggestion as to practical soundness. This suffices to clear the practitioner from blame in the event, say, of a horse dying a few days after examination and purchase, from a tumour in the brain.

Mr. C. HUNTING thought it would be best to form a Congress Committee to draw up a code of rules to guide us in forming opinions, and to be adduced in the witness box as the outcome of deliberations of a large number of qualified practitioners.

Mr. C. SHEATHER quite agreed with the last speaker, and thought in examinations as to soundness the opinion of the examiner is often at fault.

Mr. HEATH urged the necessity for a tabulated statement of conditions, and the expression of opinions by the most talented men of the profession as a basis for future conclusions.

Mr. FREEMAN, of Hull, showed that a grunter, though not at the time a roarer, may have the disease in an incipient stage, and so subsequently become markedly affected. At agricultural shows certainly horses with Sidebones ought to be rejected. Much is to be taken into consideration in each case of diseased hocks.

The PRESIDENT then showed that though much had been said on this subject no definite conclusions had been arrived at, since many men have many minds. One very great difficulty is that a horse sound to-day may be unsound to-morrow. With regard to difference of opinion, it certainly is a fact that we do so no more than other men.

Professor AXE failed to see the present drift of the argument, but thought that our aim must be to increase the amount of pathological knowledge by practitioners, and to frame a form of certificate which will protect the practitioner from such legal mishaps as have sometimes followed the giving of a certificate of soundness.

Mr. MEYRICK then replied to the questions put to him, and the discussion terminated.

A resolution in support of the "Veterinary Surgeons' Bill" was carried, after some explanations of its present position by Messrs. Colam and Fleming; measures were then taken for the immediate forwarding of this resolution through the proper channel.

The sitting then terminated.

The Second Day's Proceedings, Third Sitting, commenced by the acceptance of the resolution that "The Congress protests against the project of establishing a distinct veterinary licensing body in Ireland ; it also considers that a school in Ireland, affiliated with the Royal College of Veterinary Surgeons, would not tend to professional disunity, and therefore the establishment of such a school is not open to these objections."

Professor ROBERTSON'S paper, on "The Influence of Disease of the Lower Animals on the Health of Man," was then taken as read, and Professor AXE, in a long and able address, introduced the discussion on this subject. He insisted that the veterinary surgeon shall take part in the interests of public health, and that comparative pathology should be a part of the education of the sanitary officer.

Professor DUNCAN, after an eloquent appeal in favour of increased microscopical research, and an expression of his opinion on the subject in question, carried a motion to the effect that "The Congress is desirous of recording its opinion that, both to the medical and veterinary practitioner, the study of comparative pathology is of paramount importance at the present time."

Mr. MACKINDER then related a case of what he considered indubitable transmission of Tuberculosis from a cow to two people.

The PRESIDENT also spoke on Tuberculosis, giving his ideas at some length. He showed that the science of experimental pathology must come largely to our aid in tracing the relations between disease in animals and in man. Also that man receives more disease from animals than he gives to animals.

Dr. CREIGHTON, in response to a call from the President, expressed his views that hearty co-operation is necessary to elucidate many matters of interest to both medical and veterinary practitioners. He alluded to and explained his views that there is a form of Consumption in man resembling that seen in the ox. He thought much tubercular matter, especially milk from scrofulous cows, was sold to the detriment of the public.

The PRESIDENT then called for statistics of the prevalence of Tuberculosis amongst the cattle of this country, such as he thought country practitioners could best supply. He also suggested that certain forms of Enteric Fever in man might be dependent on Swine Plague.

Dr. OSLER, of Montreal, thought there are as yet no reliable facts on this disease of pigs in its relation to maladies of mankind. He also expressed his views that to the medical practitioner this matter now before the notice of the meeting is the most likely of any to give good results to careful inquirers.

Mr. PENHALE thought the percentage of tuberculous cows could hardly be estimated, because of the amount of deceit practised by butchers to secure sale of the carcases of such. He quoted a case in which an outbreak of pig Typhoid seemed due to Typhoid Fever in man.

Mr. MOIR then "protested against meat inspectorships being given to non-graduates when members of the veterinary profession are available." He embodied this protest in a proposition which was subsequently accepted by the meeting.

Mr. HEATH mentioned a case of Diarrhœa resulting, apparently, from eating the flesh of a pig which died from Typhoid. He directed the attention of veterinary surgeons to investigations on the subject under consideration as most likely to elevate us in the eyes of the public.

The PRESIDENT then put Professor Duncan's motion to the meeting, and it was carried by a show of hands.

Mr. M. HEDLEY, of the Irish Inspecting Staff, then proposed, "The

Congress regrets that British veterinarians have hitherto received no Government aid to enable them to carry on original scientific investigations," which met with the approval of the meeting.

Mr. OLVER'S motion, that "The Congress protests against veterinary surgeons being called to serve on juries" was highly approved, but discussed in its relations to the "Veterinary Surgeons' Bill." It was then carried unanimously.

Mr. JAMES ROWE then proposed, "The Congress approves the action of the Royal College of Veterinary Surgeons in endeavouring to obtain a Government grant for its 'Building Fund,' and consider its services to the public entitle it to at least such slight recognition." This led to some remarks by several gentlemen on the frequent mistake of confusing the Royal College of Veterinary Surgeons with the Royal Veterinary College, made by uninitiated persons. It was felt that a fitting building for the former would be the best means of preventing this confusion, and the proposition was accepted by the meeting.

Mr. J. H. STEEL then obtained from the Congress a vote in favour of the following resolution: "The Congress, as a national gathering, ventures to suggest to the Royal College of Veterinary Surgeons, that with a view to consolidating and extending its authority, and preventing the multiplication of portals to the profession, it will take measures for the judicious affiliation of veterinary schools of all parts of the British empire."

Dr. OSLER said that such a movement would be willingly accepted by the Canadian schools.

Professor WALTERS spoke at some length and most forcibly in proposing to the meeting, "The Congress considers that, notwithstanding official recognition, veterinary surgeons, as such, have not hitherto received such honours, rewards, and appointments as from time to time are distributed among the members of other learned professions." The Congress voted unanimously in favour of this.

Mr. MACKINDER'S proposition, "The Congress approves of the action recently taken by some influential societies at their shows, in disqualifying as prize-takers all animals, which can be used for breeding purposes, affected with hereditary disease," was readily adopted; as also was that of Mr. WM. PALLIN, "That the Congress protests against the prevailing tendency to work horses too young; especially it considers that the excessively early racing at present frequently adopted tends to deterioration of the English racehorse, and to the increase of unsoundness in British horses in general." Mr. Pallin alluded to this in relation to thoroughbreds, and Mr. HUNTING, senior, supplemented his remarks by showing that the same thing applies to cart-horses.

Mr. N. ALMOND then, for Mr. GERRARD, who was unfortunately prevented by illness from attending, brought forward the following proposition by means of Mr. Gerrard's notes and a few observations of his own, "The Congress is of opinion that the indiscriminate method of breeding live stock, notably horses, from unsound and injudiciously-selected animals, tends to the increase of sickness and the general deterioration of the races of domesticated animals." After remarks by several of the gentlemen present, especially in favour of the licensing of stallions by the Government, the proposition was carried, and the meeting adjourned for luncheon.

The Fourth Sitting commenced at two p.m. by a statement from the Chair of the valuable and energetic support which, since the last evening, had been given to the advocates of the "Veterinary Surgeons' Bill" then before the House, by the Royal Society for Preventing Cruelty to Animals.

Mr. SANTY then exhibited his tooth-drawing instrument, and explained its use.

Captain RUSSELL'S paper on "Effective Legislation against Contagious Diseases of Animals" was then taken as read, and Mr. SANTY opened the discussion on this subject by an excellent review of the systems at present in vogue. He especially thought that independent veterinary inspection cannot be carried on by private practitioners.

The CHAIRMAN deplored the slowness of our advances in this matter in Great Britain, and alluded to the duties of the veterinary profession in the extirpation of all these diseases, a matter which can be done, and ought to be done at once.

Mr. JAS. MOORE then spoke of inoculation as a sure prophylactic against Pleuro-pneumonia. He feared the insidious nature of Glanders would prevent its ever being thoroughly eradicated from this country.

Mr. WM. HUNTING remarked that Orders in Council and Acts of Parliament are all very well, but the difficulty is to get them thoroughly acted upon. He thought Government ought to require veterinary surgeons to report all cases of Glanders which come under their notice.

Mr. WARD gave instances of the unsatisfactory working of the present system, and cordially approved of Mr. Santy's suggestions as to the appointment of independent inspectors. He embodied his views in a resolution, which was accepted by the meeting: "With a view to the suppression of direful contagious animal diseases, it is the opinion of the Congress that members of the profession should be appointed as officers for that purpose alone."

Mr. M. HEDLEY, jun., considered the clauses of the Contagious Diseases (Animals) Act quite sufficient for suppression of Pleuro-pneumonia if thoroughly carried out, but they seldom are so. If local authorities will not see to this, the central authorities must take all these matters into their hands.

After some further remarks from the CHAIRMAN, the discussion was considered closed.

The meeting then took Mr. WM. HUNTING'S paper on "Cruelty to Animals from a Veterinary Point of View," as read, and the discussion on it was opened by Mr. CLEMENT STEPHENSON, who, after speaking of the different dispositions of animals, said there is no man can do so much towards preventing cruelty to animals as a veterinary surgeon. We ought to go about our patients gently and carefully, and speak quietly. He then enumerated a number of different forms of cruelty, making comments on each of them, especially on unnecessary blistering and excessively heavy shoeing.

Mr. ROWE thought the time of the meeting ought to be devoted to consideration of a series of questions as to what is or is not cruelty. He thought the "Aye" or "No" of the meeting should be taken in this connection on such practices as docking, cropping dogs' ears, "worming," uncalled-for operations of all kinds, etc.

Mr. COWIE next read his opinions on vivisection as observed by him at the veterinary schools on the Continent, practised for the purpose of attaining surgical manipulative skill. He showed the beneficial effects of persistent efforts which he had made to protect the victims of this cruelty, concluding by proposing that "The Congress pass a vote in opposition to such methods of education as being quite needless."

Mr. ARMATAGE seconded the motion.

Mr. COWAN then brought before the meeting the question of spaying of swine in its relations to cruelty.

Mr. COLAM complimented Mr. Cowie on his efforts to suppress vivisectional education in surgery in France and other continental countries, but feared he overrated the success of his efforts. He then explained at length

the relations between the veterinary profession and the R.S.P.C.A. in the matter of cruelty. He requested the opinion of the meeting on the process of "caponing fowls," which he thought most barbarous, and would like to suppress. He questioned the necessity for castration. He distributed to the members present small books on cruelty and bearing-reins as prepared by the Society. He thought the meeting could not decide absolutely what is cruelty. This question had wisely been left open by the legislature. Docking is penal as being cruel.

Mr. SAMSON showed reasons why it is absolutely necessary to dock some horses. Also he urged that exercising in cases of Laminitis and blistering are sometimes cruel as being excessively or injudiciously resorted to.

Mr. SHEATHER thought a most unwarrantable irritation has been raised against bearing-reins. Without their aid we should have to pension off numbers of useful draught animals. So the bearing-rein is sometimes an article of utility.

Mr. MEYRICK agreed with the last speaker. "Nicking," or "docking," he thought warrantable in some cases. Dishorning is a brutal operation. Shoeing is sometimes so performed as to be cruel.

Mr. HURRELL drew attention to the overloading of horses. He proceeded to express his approval of castrating pigs to promote their fattening, but very severely reprobated the use of the caustic clamps in castration. Often the sale of irritant drugs by chemists and other unqualified persons caused severe pain. Again, improperly managed parturition cases, drawing teeth to make the animal look older, are associated with unnecessary pain.

Mr. FREEMAN urged the necessity in some cases for several of the operations which had been mentioned.

Mr. R. WARD remarked on the frequent abuse of the twitch.

The PRESIDENT then said that the position of a veterinary surgeon in relation to animals is a proud one. He is a scientific and almost the natural protector of animals in this respect; his function is noble in direct ratio with the helplessness of his patients. It may be unhesitatingly stated that the veterinary profession has not abused its position, and that if an operation has to be done, it is performed in as humane a way as is compatible with efficiency. "The more one operates the more tender one becomes, has been my experience." The profession is sorely tempted in the matter of docking, cropping, and other fancy operations, but can stand inquiry. There is the closest bond of union between the R.S.P.C.A. and the veterinary profession, and in each case of doubt a veterinary surgeon is consulted. He then proposed that a "Committee be formed to consider the question of cruelty, and publish its conclusions." This suggestion was adopted by the meeting, and Messrs. W. Hunting, Stephenson, Cowan, Moir, Broughton, and Ferguson were elected members.

Mr. COWIE's proposition was then put to the vote and received by the meeting. After the word "experimental" had been omitted, it was adopted.

The following gentlemen were then elected members of a "Committee on Soundness of Horses, to formulate some general conclusions on the subject." Col. Ravenhill, R.A., Professor Axe, and Messrs. Banham, Dwyer, Meyrick, Olver, Sheather, and Stanley.

The following minor subjects were then brought forward:—

Mr. GARSIDE proposed, "The Congress approves the action of the Royal College of Veterinary Surgeons in establishing an uniform standard of matriculation examination for all schools affiliated to it, thus placing all on the same educational footing."

After some remarks from the PRESIDENT, this was carried.

Mr. HANCOCK then proposed, "The Congress urges upon the Royal College of Veterinary Surgeons the necessity for increased severity of its

practical tests in all professional examinations, and on the veterinary teaching schools the necessity of increased facilities for practical instruction." He thought practical instruction should be given by practitioners, and spoke in favour of apprenticeship.

Mr. HUNTING proposed as an amendment, "That the Congress, valuing practical knowledge in its proper place and degree, believes that a practical examination is quite sufficient to test the student's capacity and education, and that this renders the 'apprenticeship clause' quite unnecessary."

The original resolution was carried by a large majority.

Mr. BANHAM's pamphlet, entitled "Suggestions for the Formation of a British National Veterinary Association," was then considered, and the opinions of the Congress expressed in the following manner: "A British National Veterinary Association would be advantageous to the veterinary profession. A committee shall be formed to consider the subject and frame rules for its guidance."

Mr. HUNTING then brought forward that, "This Congress, consisting of British veterinary practitioners and others interested in the welfare of our domesticated animals, considers such meetings as the present conducive to the public welfare, and advantageous to the veterinary profession, and that it is advisable the British National Veterinary Congress become an established institution." This was carried by acclamation.

After settlement of some details as to finances and other affairs of the Congress, and instructions to the secretaries with a view to production of the "Proceedings," etc., votes of thanks were accorded to the President, Originating Committee, Local and General Secretaries, essayists, and Provisional Committee, and also to the Society of Arts for the use of their Lecture Theatre in which to hold the sittings.

The proceedings then concluded.

THE ROYAL COLLEGE OF VETERINARY SURGEONS.

MONDAY, October 3rd, being the opening day of the Royal Veterinary College at Camden Town, the Fellows of the Royal College of Veterinary Surgeons dined together at Anderton's Hotel, Fleet Street, E.C. Although the muster was not strong in numbers, many of the earnest and hard-working members of the profession were present.

The chair was occupied by Professor Robertson, and the vice-chair by Robert Ward, Esq. George Fleming, Esq., the President of the Royal College of Veterinary Surgeons, was the "guest" of the evening. Amongst those present we noticed Professor Williams, of Edinburgh, T. Greaves, (Manchester), George Williams, veterinary surgeon to the Queen, Alfred Broad (London), W. Cartwright (Salop), J. Freeman (Hull), Wm. Hunting (London), J. J. Lupton (Richmond), E. Santy (Norwich), F. Blakeway (Stourbridge), G. A. Banham (Cambridge), etc. After the usual toasts, the "guest of the evening" was proposed by the chairman, who alluded to the labours of Mr. Fleming in veterinary science; and now we have his last work, the Veterinary Surgeons' Bill, which has been so long sought by the profession at large. The anxiety and labour necessary must have been great, but the end has been attained. Mr. Fleming presented the result to the profession, bearing all the expense as well as toil. The chairman spoke feelingly for the non-members, saying he had in his position as the principal of the Royal Veterinary College been brought in contact with some twenty non-members whom he found to be most respectable men, respected and esteemed

in the locality of their practice; he should be sorry to see these men neglected. The college had done all it could for them. Referring to the Matriculation examinations, he hoped to see *uniformity*. In conclusion, he said the public duly appreciated the skilful veterinary surgeons, and willingly paid his fees for advice; in Scotland, the clients paid for the visits, but disliked to be *physicked*. In a few appropriate words the toast was given, and most enthusiastically received and drank.

Mr. FLEMING replied in a lengthened speech, notifying that this was the first Fellows' meeting after an existence of five years and upwards. At first he felt diffident about the invitation as "guest," because he had much, if not all, to do with the creation of the degree, but on reflection he decided to accept it. The profession in a year or two, he said, would be entirely in the hands of those who are Fellows, and he trusted they would realize the fact that the government of the profession would devolve on them alone—a responsibility of magnitude, for the profession must not be permitted to retrograde after so much had been done.

He joined with Professor Robertson in hoping to see the Fellows meeting to read and discuss papers and lectures on interesting subjects of importance, which would tend to both professional and public good, and also that ere long a suitable edifice may be obtained for such purpose, a building such as the Royal College of Veterinary Surgeons should possess.

The Veterinary Surgeons' Bill had caused him many a sleepless night, and days of anxiety and activity. It was strongly opposed, and he had great odds to combat with. Lord Spencer and Lord Aberdare tendered their invaluable aid, and with the excellent advice and assistance of the Hon. Mr. Mundella, the bill was at last passed. The profession owes a debt of the deepest gratitude to them both individually and collectively, and the able Secretary of the R.S.P.C.A., Mr. Colam, must not be forgotten, for he was greatly interested.

In conclusion, he said all he had done and gone through was but a labour of love for the profession, his desire being to assist to his utmost in placing the "veterinary art" in the position it should occupy in the kingdom, as one of its most important liberal sciences. The reception that evening, and at such an excellent banquet, surrounded by the Fellows, made him feel delighted he had worked for the cause, and had now been invited to rest and be happy.

Professor WILLIAMS, in reply to the "Teaching Schools," proposed in a very good-natured manner by Mr. Hunting, said the teachers did their utmost and were ever ready to advance the science. He hoped to see comparative pathology developed by men being selected and sent out to investigate diseases and their products, a fund being created to pay them for the service. He felt sure competent men could be found. Society and the profession would be benefited thereby.

Mr. BANHAM proposed the "Veterinary Medical Associations," responded to by Mr. Santy. Mr. Fleming introduced the "Benevolent Society," to which the esteemed and benevolent originator, Mr. Greaves, responded. A most enjoyable and interesting evening was passed, the object of the originator of the meeting (Mr. Ward) being fully realised, *i.e.*, to *promote good-fellowship*.

Hopes were expressed that a similar meeting will be convened next year.

The ice having been broken, we hope to have the pleasure of reporting the occasional meeting of the Fellows as with other learned societies; the idea expressed by one or two that the assembling of Fellows looks like a meeting in "clique" is most absurd. The royal charter forms a "clique," if any, and the royal portal is open to any member efficiently equipped, fully and duly prepared. As time goes on the examination will go on

increasing in magnitude, so that the royal portal will be more difficult still to enter. Those members of the profession possessing a fair education, and who have been energetic practitioners, painstaking, and given to study, can, by close application at intervals, work themselves up to pass the ordeal, just the same as others have done ; if they will not compete it is their own fault. We wish that emulation did more abound with us. We console ourselves that it is better to have the few earnest and good than the many careless and indifferent. Still we feel confident the number of Fellows by examination could be increased did "zeal" prevail.—*Communicated.*

PROFESSIONAL DESIGNATIONS.

THE recent Act of Parliament in favour of the Veterinary profession, compels us to draw attention to the designations by which qualified members should be known to each other and the public. To distinguish these from non-qualified persons who are registered as "Existing Practitioners," and who may be allowed to retain the title of Veterinary Surgeon which they have practised under for more than five years, Fellow or Member of the Royal College of Veterinary Surgeons, or the initials (F.R.C.V.S. or M.R.C.V.S.), should always be adopted, whether Veterinary Surgeon is used or not ; as a penalty can be inflicted on any non-member who may assume either of them. One other matter should be noted. It is the absurdity of adding the letters E or L, or both, to M.R.C.V.S. The addition is not only ridiculous, but is calculated to mislead. There is only one Royal College for the three Kingdoms. Not less absurd and misleading is the addition of the initial letters of a students' Society, or any other Society which has no recognised public position ; and it would be well if such superfluous and incomprehensible addenda could be dispensed with, as they only testify to the existence of a peurile vanity in him who takes the trouble to affix them to his proper professional title.

THE HIGHLAND AND AGRICULTURAL SOCIETY'S VETERINARY CERTIFICATE.

SEVERAL correspondents have requested to be informed as to the position now occupied by the holders of the veterinary certificate of the Highland and Agricultural Society of Scotland, with regard to the Veterinary Surgeons' Act. It appears to us that the Act only recognises, and can only recognise, two classes of veterinary practitioners : the qualified and non-qualified. Those gentlemen who are on the register of the Royal College of Veterinary Surgeons belong to the former ; those who are not on that register compose the latter class. There could be no intermediate class, and those who framed the Bill acted on the supposition that the very favourable terms held out to the holders of the certificate by the Supplemental Charter of the Royal College would be accepted, and that these gentlemen would thus gladly extricate themselves from an anomalous and unsatisfactory position. There is no special provision made for them, nor are they recognised in the Act, except in so far that they are exempted from its penal operations. In this respect they are on the same footing as the unqualified or "existing" practitioners who shall be allowed to register, and who by such registration can practise, as they have done for at least the last five years.

It must be admitted that, so far as the law goes, the case of the certificate

holders is one that should be remedied, and the remedy is in their own hands. Nowhere can they appear in the register of veterinary surgeons unless they are registered in either of the two classes, and it is greatly to be hoped that they will register, and that in the class to which they should and do in reality belong. No false spirit of pride or antagonism should allow them to remain longer in a position which is exceptional and unworthy of them, and which certainly in no way benefits themselves or the profession. Very few now hold the certificate only, and these will best consult their own dignity and feelings by joining the great and ever-increasing majority included as members of the Royal College of Veterinary Surgeons. From a professional point of view, they will occupy a worthier position, and they will undoubtedly relieve their registered colleagues from what is sometimes a state of embarrassment and apparent (only) hostility towards them.

Reviews.

A Treatise on Diseases of the Ox. By J. H. Steel, M.R.C.V.S., F.Z.S. (London: Longmans, Green and Co., 1881.)

Mr. Steel's manual of bovine pathology is a welcome addition to English veterinary literature, and especially that section of it which is not written for amateurs, but for members of the profession. Consequently, it is far ahead of any previous work on cattle diseases, and though it does not pretend to offer much in the way of novelty derived from the author's own personal experience, yet it will be found of great value to the busy practitioner and the student, embracing, as it does, a large amount of the latest information, arranged in the handiest manner for reference, and so well summarised that those who have but little time for study can glean the salient features of every disease and accident without much delay. For these reasons we can confidently recommend the book, which does credit to the industry and literary skill of the ex-demonstrator of anatomy at the Royal Veterinary College, who, we trust, from the opportunities an army career affords, will continue to add to the list of works he has so auspiciously commenced.

Riding: On the Flat and Across Country. By M. Horace Hayes. (London: W. Thacker and Co., 1881.)

The object of Captain Hayes in writing this book, as he tells us in his preface, has been to teach the art of riding in a "workmanlike" manner, and from long experience in the saddle and a careful perusal of the work, we are satisfied that very few better teachers could be found. Everything pertaining to horsemanship and horsewomanship, so far as riding is concerned, is included in a volume of some 250 pages, and described in the clearest and briefest manner. Every veterinary surgeon should, from the very nature of his vocation, be more or less of a horseman; but it is only too true that some are not much at home on horseback even on the road, while across country a still larger number have something to learn. To be able to ride well is an accomplishment acquired by only a few of the many who have to

do with horses, while to be a good amateur jockey either on the flat or in a steeplechase, demands a certain kind of skill and natural capabilities which is somewhat rare. Captain Hayes had already written a very excellent work on horse training and management in India, and which was favourably reviewed in this journal, so that he came to his present task well prepared to teach novices—aye, and even some who do not consider themselves such—how to ride at home. So far as reading can teach, and very graphic illustrations show, the volume is, in our opinion, all that could be wished for. It should be in every horseman's book-case, and be perused by every lady equestrian.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL HELD OCTOBER 4TH, 1881.

Present :—The President (George Fleming, Esq.), Professors Robertson, Williams, Walley, Brown, and Axe ; Messrs. Anderton, Batt, Blakeway, Coates, Collins, Cox, Dray, Freeman, Gowing, sen., Greaves, Harpley, Morgan, Reynolds, Simpson, P. Taylor, Whittle, Woods, Wragg, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

Presentations to the Library.

The SECRETARY announced that the following presentations had been made to the Library :

"Calendar of the Royal College of Surgeons," presented by the Council.

"Papers on the Disease called 'Surra,'" by F. F. Collins, Esq.

"Report of the Belgian National Veterinary Congress," by Dr. Wehenkel.

"The Journal of Medicine and Dosimetric Therapeutics," Dr. Phipson.

"Pamphlet on Field and Feeding Experiments," Dr. Voelcker.

"The Dentists' Register," by Vice-president H. L. Simpson.

On the motion of Mr. DRAY, seconded by Mr. GOWING, a vote of thanks was awarded to the donors for their presentations.

Correspondence.

The SECRETARY announced that Mr. Dun had sent a letter regretting his inability to attend the meeting.

A letter was read from Mr. T. J. Scammell—*re* J. Wycherley—who was a student in 1874 under the old rules, asking if he might present himself for his Final Examination under the new rules.

The Council decided that the applicant should, in accordance with the general rule laid down, pursue his studies *de novo*.

An application was made by Mr. J. G. Watson, in regard to which the Council came to the same conclusion.

An application for a certificate by Mr. Lord, which had previously been made to the Council, was again considered ; but the reply given by that gentleman to the Council as to how the diploma had been lost not being considered satisfactory, it was decided that the matter should stand over.

Applicants for Diplomas.

The usual diplomas were granted in favour of Messrs. W. Dent, H. O. S.

Keyes, and T. J. Simpson, holders of the Highland and Agricultural Society's certificate.

The Veterinary Surgeons Act.

The PRESIDENT detailed the difficulties that had been encountered since the last meeting of Council, when it was unanimously decided to urge forward the Bill in the form in which it then stood. He also referred to the opposition given to the Bill by some of the members of the Council, and read the correspondence bearing upon it. He spoke of the good services rendered by Earl Spencer, Mr. Mundella, and Lord Aberdare in the passing of the Bill. Accompanied by Mr. Collins (the Principal Veterinary Surgeon to the Army), and Professor Robertson (Principal of the Royal Veterinary College), he called upon Mr. Mundella, who gave a very gloomy account of the prospects of the Bill owing to the opposition offered, and who was astonished to find that a portion of the opposition was made by members of the Council, since it was understood that, if passed, it would benefit the profession. Mr. Mundella told them plainly that if the opposition to the Bill could not be removed outside the House it would be fatal to its passing. He (the President) then went immediately to work. Fortunately a Congress of the profession was sitting in London, largely represented by the most eminent members, and petitions were sent in from every side in favour of the Bill as it then stood, and in the form in which it had been approved by the Council. The Royal Society for the Prevention of Cruelty to Animals telegraphed to all its branches throughout the country to exert their influence in removing opposition to the Bill. In the course of two days, 197 petitions were lodged in favour of the Bill by these and different veterinary societies. At the Conference referred to the opposition to the Bill was discussed. In consequence of that opposition, which was started upon the Council all at once and without notice, it became necessary to take very active steps to overcome it. Owing to the late period of the season at which it was introduced, and in consequence of the obstruction that prevailed to the transaction of general public business, it seemed at that time an almost hopeless task to get the Bill passed. A Bill against which there was the slightest amendment or motion could not be discussed after half-past twelve at night; so that the prospect looked very gloomy. There were no fewer than five motions against the Bill to have it thrown out; these were made by Sir E. Watkin, Mr. Cowan, of Newcastle-on-Tyne, and others. Mr. Whitley, M.P. for Liverpool, proposed an amendment to the effect that Clause 15 should be expunged. As this was an essential clause of the Bill, the expunging of it would have been as fatal to its progress as any motion would have been that it be read that day three months. The opposition to the Bill on the part of several members of the profession was rather discouraging to Mr. Mundella; however, he was at last convinced that such opposition did not come from anything like a large or influential portion of the profession, and he undertook to carry the measure if he possibly could. One amendment and motion after another was removed, and the consequence was that the week before Parliament rose the Bill was passed. This was greatly due to the tact and determination of Mr. Mundella. There was no use denying that the Bill had had a most narrow escape of being rejected. It had, however, passed, and it was his pleasing duty to announce that the profession now stood on a better footing than it had ever done in this country. The advantages conferred by the Bill were great at present, but prospectively they were still greater. He had referred to the opposition offered to the Bill, simply to show that it was no easy matter to pass it through the House of Commons, although he had got it passed through the House of Lords without much difficulty. If the Bill had not passed this session, and had been carried into

the next, the opposition to it would have been still stronger; because the unqualified men, acting through their members of Parliament, would have organised a very formidable opposition indeed. This was shown from the mass of correspondence that had taken place on the subject, and which showed that if the Bill became law it would injure the unqualified men. It was impossible that the House of Commons would have passed the Bill if Clause 15 had been expunged, and had it not been for the exertions of Mr. Mundella the Bill would not have passed this session, and perhaps for many sessions to come. The profession, in his opinion, had gained far more concessions now than they would have done in the future. Unqualified men would have been vastly encouraged by the defeat of the measure, and any one who undertook its introduction at some future period would have found himself in a difficulty, seeing that the profession was not united in the passing of a Bill which was calculated to benefit it so largely. He congratulated the members that the Legislature had seen fit to pass such an important and beneficial Bill.

Mr. DRAY moved "That the special and best thanks of the Council be tendered to the President for his unceasing exertions and untiring efforts in obtaining the Veterinary Surgeons Act, which is a great boon to the profession, by securing a safeguard to their rights, interests, and privileges." There was, he said, a proverb that office proves the man, and never had any aphorism been so much verified as in the case of the President, by whose indefatigable exertions, and under difficulties almost insurmountable, the Bill had been passed. There had been an occult and almost inconceivable opposition to encounter; but these obstacles only had the effect of the President redoubling his exertions, and with unflinching courage and indomitable perseverance he had fought the battle and conquered.

Professor BROWN seconded the resolution. He did so for the simple reason, which he had already stated very distinctly in public, that he believed the Bill was practically carried by the President. He (Professor Brown) had rendered the President whatever assistance he could in the matter which came before him in his official capacity. The President had alluded to the opposition that had taken place on the part of some of the members of the profession. The Bill had now passed, and he (Professor Brown) hoped that whatever had been done in the way of opposition should be relegated to the past. He should like to say, however, that he quite understood the feeling which was at the bottom of the opposition. They had always been told that some time in their progress an attempt would be made to introduce and carry through the House a measure which should give to the holders of the College diploma the exclusive right to the title of veterinary surgeon, which they were led to believe had been conferred upon them by the Charter; and therefore he thought that certain members who had an enthusiastic belief in this proposition would be displeased at anything that would interfere with this view. He at once abandoned sympathy with this view, in the face of the advice which the Government had at its disposal. In fact it came to this, that the Lord President would have decided not to take charge of the Bill, and so would Mr. Mundella, unless some provision had been made to protect unqualified practitioners. As a rule, he believed that all persons in *bonâ fide* practice in a profession were in some way recognised by any measure that gave exclusive privilege to honest practitioners. As the measure now stood he, for his part, thought it did confer on the profession a position it had not previously held. It consolidated and recognised the Charters; it gave the exclusive right of title of Member of the Royal College of Veterinary Surgeons. From the passing of the Act no other one could use any initials signifying that he was a member of the College; but it did not give to him the exclusive right to

the title of veterinary surgeon. It said, quite distinctly, that all those who were now practising could, if they choose, at any time during a year from the time of the passing of the Act, apply for registration. They were required to show to the satisfaction of the Council, that they had been five years in continuous practice. It would be for the Council to determine whether the evidence was satisfactory. Questions had been put and discussed as to whether a man was an assistant or a practitioner. The fact was that his being an assistant did not vitiate his being a practitioner; but it was for the Council to decide whether or not the candidate was eligible. There was, in the usual course of legislation, an appeal to the Privy Council, but he thought that no loophole ought to be left for any such appeal to be made. His own idea was that the Council would not be pestered by many applications for registration by unqualified men. Probably the larger number would refuse to pay the fee for having their names put on the Register, which would positively announce to the public that they were not members of the College, because the Act said, "Such members shall not be deemed members of the College." If a separate Register were drawn out it would be headed "Existing Practitioners who are not deemed to be members of the Royal College of Veterinary Surgeons." It was apprehended that a certain number would apply to be registered, and towards such applicants he would adopt a conciliatory attitude, because they would call themselves veterinary surgeons whether they were registered or not; but at the end of 1882 or 1883, from his reading of the Act, a man could not do anything which would make the public conclude that he was entitled to practise in any branch of veterinary surgery. The Act, no doubt, gave the members of the College an enormous grasp over the empirics in their neighbourhood, and in this respect it went very much further than they had any right to expect. His conviction was that, had it not been for the personal trouble which the President took in working the matter out in the face of all the difficulties that fell in his way, it would have been quietly shelved, and although it might have been brought forward in another session, the opposition would have accumulated, and even if it were then passed it would not have been so good as it was now.

Mr. REYNOLDS, while not opposing the motion of Mr. Dray, explained in detail the reasons which had induced him to oppose the measure, and expressed himself as still satisfied with the part he had taken.

Prof. WALLEY, in supporting the motion, said he failed to see that any Bill could have been obtained so favourable to the profession as the one that had been passed.

Mr. P. TAYLOR said that any opposition he might have given to the Bill was prompted by conscientious motives, and his desire to do what he believed right in the interests of the profession.

Prof. WILLIAMS proposed to add the name of Prof. Brown to the motion before the Council.

Mr. MORGAN seconded the amendment, and explained his reasons—which he had also done at a former meeting of Council—for opposing the Bill. He had nothing to apologize for, and did not intend to apologize.

Prof. BROWN desired that the motion should be left as it originally stood. Any assistance he had rendered to the President had merely been done in his official capacity. All the credit for the passing of the Bill he considered was due to the President, for when he (Prof. Brown) was informed as to the great opposition brought against it, and the state of Parliamentary business, he despaired of its passing, and gave up all hope. He was greatly astonished to find it had passed. He accordingly disclaimed any credit for this successful result.

Mr. GREAVES supported the motion, and passed a high tribute to the

ability of the President, and the energy he had displayed in passing such an excellent measure. No President had ever done so much for the profession.

The motion, as originally framed, was then put and carried by acclamation.

The PRESIDENT, in returning thanks, explained the difficulties he had had to encounter, almost single-handed, in having the measure passed. It was only by a fortuitous combination of circumstances—by the good offices of the Royal Society for the Prevention of Cruelty to Animals, of the Lord President of the Privy Council, Mr. Mundella, and Prof. Brown —that it had been passed. The Bill as it stood would, he believed, be hailed by the present members and their successors as a great boon. He did not extol it in any party spirit, but he thought that those who were not actuated by biassed motives, and who understood the position of the profession, would agree with him that the Bill would be highly beneficial to the profession.

The SECRETARY read the reports of the *Fellowship Examination.*

The Examiners' Report.

At the meeting of the Court of Examiners, held in London on the 4th July, 6 students from the Royal Veterinary College passed their Examination, and received their Diploma, and 5 were rejected.

At a meeting on the 5th for the Second Examination, 6 passed and 3 were rejected. And

On the 6th, 7th, and 8th for the First Examination 18 passed and 10 were rejected.

At a meeting of the Scottish Section of the Court of Examiners, held in Edinburgh and Glasgow on the 13th and 14th of July, 11 students passed their Final Examination and received their diploma, and 8 were rejected.

At meetings held in Edinburgh and Glasgow on the 11th, 12th, and 13th July for the Second Examination, 22 students passed and 18 were rejected. And

At meetings held on the 15th, 16th, 18th, and 19th, 63 passed their First Examination and 24 were rejected.

Finance Committee.

The Report stated that the vouchers and receipts for payments had been examined and found correct.

Cheques were ordered to be drawn for the current expenses.

Southern Counties' Veterinary Association.

Mr. HARPLEY stated that he had received a circular letter from the Hon. Secretary of the Southern Counties' Veterinary Association, who were to hold their meeting on the 29th of the current month at Brighton. He (Mr. Harpley) was asked to attend, but could not. The circular stated that the meeting was a complimentary one to receive the President, in token of his untiring zeal in the passing of the Act, and for his having paid all the expenses out of his own pocket. He (Mr. Harpley) thought that the President ought to be reimbursed.

The PRESIDENT said he was sorry the circular should have been issued in the form it did. He believed the Act had not cost the Royal College of Veterinary Surgeons one penny, and it was not his wish or intention that it should. He trusted that, having made that statement, the matter would be allowed to drop. He was extremely pleased to think that the Act was appreciated and valued by all right-thinking men, and that was the highest compensation he expected to receive.

After some conversation, in which some of the members endeavoured to persuade the President to have the expenses refunded,

The PRESIDENT said he felt it would be a slight on him if the matter were not allowed to remain as it stood. It was then, in deference to the wishes of the President, allowed to drop.

Election of Honorary Associates.

The PRESIDENT proposed the election of M. Pasteur and Dr. Cobbold as Honorary Associates. He said that several vacancies had occurred in the list of Honorary Associates, and he thought that those vacancies could not be better filled than by the election of the gentlemen he had proposed. He passed a high encomium on the services rendered by the two nominees, in the cause of veterinary science.

Mr. COX seconded the motion, which was carried unanimously.

Mr. MORGAN said he did not wish to object to the motion that had been carried, but suggested that the names of Professor Simonds and Professor Brown should be added to the list, in recognition of the eminent services they had rendered to the profession.

This suggestion was at once and heartily responded to by the members of the Council, and Professor Brown; in a few words, returned thanks for the honour conferred upon him, which, he said, was entirely unexpected.

Matriculation Examination.

The SECRETARY read the Committee's Report for the consideration of the Council, and

Prof. ROBERTSON suggested that, instead of the Oxford and Cambridge Examinations, there should be the higher certificate of the Middle Class Examination of the colleges in England, Scotland and Ireland. This would come into operation on the 1st January, 1883.

Professor WILLIAMS proposed that the Report be approved; he thought the resolutions had been conceived in a most liberal spirit. The subjects were not at all too hard, and the student was allowed the privilege of presenting his certificate one month previous to his first professional examination.

Professor WALLEY seconded the motion for the approval of the Report, which was carried.

The PRESIDENT said that the further report of the Committee would have reference to the manner of conducting the professional examinations.

Registration Committee.

The SECRETARY read the Report of the above Committee on the registration of unqualified and foreign and colonial practitioners.

Some remarks ensued as to the various clauses in the Report, especially as to the part relating to the amount of fees.

Mr. GREAVES said that the different grades of the non-qualified men should be fairly considered now we are dealing with this matter. Some of them may have served an apprenticeship to a veterinary surgeon from one to four years, then gone to college and studied all the subjects that he had studied, has had to leave college before the examination, or he may have been rejected and never been able to get to college again; he has gone into practice as manager or assistant for five years or more, but never practised on his own account. Such a man you say is not eligible, but surely such a man has greater claims upon our consideration for registration than the man who has never served an apprenticeship or been near a college, but has been acting as a farrier or quack, pure and simple, for five or more years on his own account. Again, on the subject of registration fee, I think six guineas is too

little; it ought to be ten guineas for registration. Let us for a moment remember the expense that has been incurred by the qualified man, and from the holder of the Highland Society's certificate, to secure the legal title to the name of veterinary surgeon. He may have spent one or more years of his life working amongst sick and lame horses as an apprentice, he may have paid £100 as apprenticeship fee, then gone to college, paid an entrance fee of thirty-six guineas, lived in London or Edinburgh for three years at considerable expense, then paid ten guineas for his examination and one guinea for registration. In the face of this array of expenses it was proposed to charge the non-qualified practitioner the small sum of six guineas for registration, which gives him a legal title to use the name of veterinary surgeon and make him a veterinary surgeon legally to all intents and purposes. This small sum is every farthing it ever has cost him or ever will cost him. He maintained that it would be perfectly just and right, and those men would as readily pay ten guineas as six guineas for the great privilege we are conferring upon them.

After further discussion, it was ultimately decided that six guineas be the amount, and that this be submitted for the approval of the Privy Council.

Complimentary Votes of Thanks.

The PRESIDENT moved that a vote of thanks be given to the Royal Society for the Prevention of Cruelty to Animals for the most important share they had taken, through their secretary, Mr. Colam, in promoting the Veterinary Surgeons Act.

Mr. DRAY seconded the motion, which was heartily agreed to.

Votes of thanks were also unanimously passed to Earl Spencer, Mr. Mundella, M.P., and Lord Aberdare, for the interest and action they had displayed in passing the Bill through both Houses of Parliament.

A special vote of thanks was also awarded to Professor Brown for the important services he had, in his official capacity, rendered the President in connection with the measure.

Pupilage.

The PRESIDENT submitted the case he had prepared for the opinion of the Attorney-General in regard to the question of pupilage, together with that opinion, which was adverse to pupilage, but in favour of a matriculation examination. He also referred to the opinions of other legal gentlemen on the same subject, and these were in some points conflicting. He asked whether the time had not come when a Supplemental Charter ought to be applied for, to define the powers of the Council in the matter, and also with regard to the amount of fees, because at present the powers of the Council seemed to be somewhat vague.

After some conversation it was agreed, on the motion of Prof. WILLIAMS, seconded by Prof. ROBERTSON, that the Secretary give notice to the various schools that the bye-law relating to pupilage was cancelled.

On the motion of Mr. COLLINS, seconded by Prof. BROWN, the subject of a Supplemental Charter was relegated to the consideration of the Parliamentary Committee, to which the name of Prof. Robertson was added.

Notices of Motion.

Mr. MORGAN proposed, as a new bye-law, "That the election of any member of the Council who absents himself for four consecutive meetings shall lapse."

After some desultory conversation, the matter was referred to the Parliamentary Committee for consideration as to the advisability of inserting a clause bearing on the subject in the proposed supplemental Charter.

Another motion, proposed by Mr. MORGAN, and seconded by Mr.

REYNOLDS, was, "That any member of the Council who shall be appointed to any office in the Royal College of Veterinary Surgeons, to which any fee or salary is attached, shall resign his seat at the Council."

This motion was also proposed to be referred to the Parliamentary Committee, but on being put to the vote it was at once lost.

Obituary.

The obituary notice was read, from which it appeared that Mr. R. L. Hunt had died since the last meeting of Council.

Mr. DRAY proposed and Mr. P. TAYLOR seconded, "That a letter of condolence be sent to Mrs. Hunt, sympathising with her in her bereavement."

The PRESIDENT and other members of the Council having spoken of the eminent services rendered by Mr. Hunt, both to the Council and to the profession, in his capacity of President and in other minor offices, and the great loss that had been sustained by his death, the motion was put and carried.

New Premises for the College.

Before the Council adjourned the President again called attention to the necessity for the acquisition of a new building, and it was decided that another attempt to obtain assistance from Government be made towards the end of this or commencement of next year.

Before the meeting closed a cordial vote of thanks was accorded the President for his conduct in the chair.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held at the Royal Pavilion, Brighton, on 29th September, under the chairmanship of the President (Mr. G. Fleming, President Royal College of Veterinary Surgeons). There was a fair attendance of members, including Messrs. R. A. Stock, F.R.C.V.S., Lewes (Vice-chairman); W. Burt, Brighton; B. Wood, Brighton; F. Farrance, Eastbourne; F. Greaves, Manchester; F. Garside, Brown Institute, London; E. C. Smith, Midhurst; B. H. Russell, Grantham; A. Glover, Godstone; R. J. Barton, Tunbridge Wells; F. G. Samson, Mitcham; A. Edgar, Dartford; M. M. Rock, Chelsfield; G. Balls, Brixton; R. A. Rock, Chelsfield; T. P. Hounsell, Chertsey; J. B. Martin, Rochester, hon. secretary.

The minutes of the last meeting having been confirmed, Mr. MARTIN mentioned that he had received letters of apology for non-attendance from twenty-five gentlemen. He read extracts from letters of three or four of the most prominent among them, showing the deep respect felt for the President, who, by his great intellectual ability, business-like tact, and sincere love for the profession, had overcome insuperable difficulties for their welfare. Mr. Martin then proceeded to remark upon the advantages and benefits accruing from their assemblage together on periodical occasions. He said he was anxious to encourage the exhibition of morbid specimens, there being, in his opinion, a great deal to be learned from a friendly consideration of them. Exhibiting the atlas of a horse, which was curious, he said, Pole-evil was a disease calculated to get the veterinary surgeon into discredit, if in his treatment of such cases he failed to exercise great care and judgment. Owing to the time occupied in effecting a cure, it was desirable first to put themselves in the position of the employer and find out, among other things, how much it was likely to cost, for what period the animal would be under treatment, and what the horse, after its recovery, would probably be worth. If they set about their task, with an utter indifference as to the ultimate result, and failed to acquaint their client of what the beneficial or other effects of their operations would be, they would certainly get into disrespect. The

case before them was one of long standing, and he must confess that, had he taken the precautions he now advocated, he should have felt much better satisfied. He explained in some detail his mode of treatment in cases of Pole-evil. After getting a depending orifice, he generally passed a piece of wire through, and then procuring a red hot iron he drew it up two or three times. This produced a large sloughing canal, which allowed of a free discharge. This method usually cured, one of its important advantages being that little or no pain was caused.

The PRESIDENT was exceedingly pleased to certify as to the great success of this mode of treating the disease. He could assure them, from experience, that the use of the hot-iron was not so painful as the knife. At Chatham, where he had occasion to practise the operation, the horse stood without a twitch the cauterisation. In fact, the hotter the iron the less pain, the nerves being destroyed without the brain having time to become cognisant of the fact. In conlusion he explained certain differences of a minor character, varying slightly his method of treatment with that of Mr. Martin.

Mr. STOCK observed that during his professional career he had had many cases of Pole-evil to treat, and in no instance had he failed to effect a cure. During the inflammatory stage he encouraged the formation of pus ; he then laid open the abscess, and took away with the knife every particle of diseased tissue he could get hold of, taking away perhaps five or six ounces. He then thoroughly dressed with a strong solution of chloride of zinc, saturating pledgets of tow with the dressing, and laying them in the orifice so made. After sewing the wound up, he allowed it to remain untouched six or seven days. Considerable pain was caused, but by that time he found he had a nice slough ; he took great care that the wound healed from the bottom. Every case he had treated in that way had recovered.

Captain RUSSELL pointed out the difficulty of getting the wound to heal from the bottom. There were rarely two cases of Pole-evil alike, the disease arising from various causes, some the result of a blow, some of disease, while others were of a cancerous nature. The latter cases were the most difficult to cure.

Mr. BURT, in reply to a question, said he found the depending orifice the best, and the use of the hot iron was far preferable to a knife.

The PRESIDENT urged them in their respective plans of treatment, to avoid the infliction of pain as much as possible. The old farrier's method of plugging with caustics was one that produced in its operation indescribable pain. He thought the injection of strong caustics was a practice they should try and get rid of. He would not say it was an unsuccessful practice—in the hands of some it was a most successful one. Nevertheless, if they could cure serious cases by the painless operation of the hot iron, that plan was the one to be exercised, inasmuch as it was a humane plan. He did not give expression to that sentiment in the way of a rebuke, but simply as advice, that if they could get a less painful treatment they should adopt it. The action of the common caustics was essentially painful, and he knew of the animals dying from the severe ordeal to which they were exposed.

Mr. WOODS, Mr. GREAVES, Mr. FARRANCE, and others having offered some remarks on the subject, and various questions on points of detail having been put and satisfactorily answered, Mr. MARTIN briefly replied. In doing so, he observed that his principal reason for bringing the specimen forward, and inviting discussion, was to impress upon his professionul colleagues the necessity of being extremely careful in giving decided opinions as to cure.

The PRESIDENT introduced a specimen whereon he founded some observations in reference to what is popularly known as the African Horse-sickness. Those of them who read much knew that in South Africa the disease prevailed to a very extensive degree. It was chiefly in the low-lying districts, and on the

banks of rivers that the disease was rampant, and where it was attended with such fearful consequences, the worst period of the year being the summer season. Ever since the Dutch took possession of the Cape of Good Hope it had been described, and wherever they had travelled the disease appeared in these low-lying fields and had proved such a terrible scourge. During the recent wars we had ample experience of the malady, although its peculiarities had been thoroughly well-known for the last 100 years. It was extremely destructive, animals standing in the fields perfectly well at night, being attacked and found dead in the morning. All kinds of notions had been circulated to account for it. He found the information the Dutch conveyed had been without result, so far as knowing the exact nature of the malady. During the operations in Zululand he had some blood sent home and some morbid specimens, but they were so decomposed or utterly dry that with the exception of one specimen they were useless for experimental purposes. He went on to remark that animals, if they recovered were not again liable, and so were far more valuable than before, and were much sought after, they fetching high prices.

Mr. Martin then read a Paper on "Some of the Differences between Contagious Pleuro-pneumonia and Tuberculosis, from a Sanitary point of View." He said :—

It is not my intention to offer you anything like an essay on these two maladies, but rather to introduce some points and facts concerning them which may tend to a discussion that will not only have a professional, but a public interest. And I am the more inclined to do this, from a desire to perform a service to the profession by endeavouring to prevent our appearing ridiculous in the estimation of the public by opposing each other, and giving antagonistic opinions in Courts of Justice, which is damaging to the reputation of the profession generally. For I feel it incumbent upon this Association to discuss at different times some of the diseases about whose nature, pathology, causation, or other matters regarding which there may be different opinions entertained by our colleagues in other counties, so that we may at least attempt to harmonise conflicting views, and arrive at a definite opinion, so as to avoid falling into some of those unpleasant dilemmas not a few of our professional brethren have found themselves in at times.

The majority of us have witnessed instances of cases tried before judges, magistrates, corporations, and other bodies, in which veterinary surgeons have given diametrically opposite opinions, and so rendered it extremely difficult for those trying the cases to decide on which side the truth was. I hold it to be the province of the veterinary surgeon to give a correct and an honest opinion in any case in which he may be engaged, so as to enable those who are giving judgment on it to properly and clearly understand the subject, and so decide justly upon it. But I have seen instances in which veterinary surgeons have become partisans of one side or the other, and give such one-sided evidence in order to win the day for their clients, that their partiality, and not their firmness, was as palpable as the book upon which they had sworn to tell the truth, and could not escape the judges or the public. Such conduct was most damaging to the dignity and honour of the profession. And we have all read of other cases, and especially one of a trial as to whether a bullock had been suffering from Contagious Pleuro-pneumonia or Tuberculosis, in which the professional evidence was most contradictory and baffling. The same diversity of opinion has been exhibited with respect to the question as to whether the flesh of animals which had been affected with Contagious Pleuro-pneumonia is fit for human food. We are all aware that in some districts the veterinary inspector allows the carcases of such animals to be disposed of for human consump-

tion, while in other districts another inspector will condemn them. Well, it so happens that when one inspector of a county sends in a salvage from this source to the Central Committee, and another has none, because he caused the carcases to be destroyed, I need scarcely say that when the subject is periodically discussed at the meetings of the Central Committees, and the difference of opinion between the veterinary surgeons and the result is commented upon, the credit of the profession is rather at stake. We have all perused, in the VETERINARY JOURNAL, the report of the meeting of the British Medical Association at Cambridge last year, and a discussion on this subject, in which our President took a prominent part. This was right and proper, for the veterinary profession should take its stand in relation to its functions, and not allow medical men to usurp our position, as we are better acquainted with practical details of the working of the Contagious Diseases (Animals) Act, and have the additional advantage of seeing the animals in the earliest stages of the disorder, watching it from day to day, following the carcase to the slaughter-house, examining the carcase, noting where the flesh goes, and observing if any bad result has arisen from consuming it as food. Therefore I contend that it is our duty to wake up and take our proper position, and more especially now that we are asking and receiving privileges from Parliament, and seeking to be recognised by the public as men of science and useful citizens. And we should more particularly discuss this matter as many of us are inspectors for the various local authorities, in order that we may be able to distinguish between Pleuro-pneumonia and Tuberculosis, when the owners of animals affected with the first-named malady have to be compensated, whereas they are not in the last-mentioned disease, unless the inspector makes a mistake in his diagnosis. Consequently, it is of the greatest importance to the ratepayers—our employers—that we should form a correct diagnosis, and we have an advantage in being able to make a *post-mortem* examination ; and there is every facility for any one at all interested in the matter, to do the same with regard to the animals we condemn, and this may prove a disadvantage to us. It is not so with the doctor, for if he makes a mistake in diagnosing a disease and death takes place, his error is rarely discovered. Such a mistake on our part would, however, damage us seriously.

There is another appointment to which we should lay claim, as being best fitted for it, and it is that of Inspector of Meat. This duty should be entrusted to the veterinary surgeon and not to the medical man or the butcher. We frequently read of, and know farmers and others fined or imprisoned for sending to market the flesh of animals which had been killed when suffering from disease, medical men having condemned the flesh. But a different result would undoubtedly sometimes occur were veterinary surgeons entrusted with the inspection of meat, as they alone have a thorough knowledge of the diseases of animals, and are best able to judge if the flesh is fit for human food.

In order to distinguish Contagious Pleuro-pneumonia from Tuberculosis, it is necessary to describe their symptoms as concisely as possible. To begin with Pleuro-pneumonia. When we know that this malady has prevailed in a cowshed, there is not so much difficulty in diagonising it, as we are prepared to recognise it. Not so, however, when it first appears, or we are not made aware of its previous existence ; for the first stage of the disease is most difficult to detect at once ; the disorder is so insidious, and there is, it may be said, no reliable symptom exhibited. There is an absence of cough or grunting ; the respiration is not disturbed ; the animal stands quietly, but with the head hanging down, though sometimes looking cheerful ; the appetite may be slightly impaired. If a cow, the quantity of milk yielded may be diminished to a trifling degree. In such a case the best test I am ac-

quainted with is—cause the animal to be raced for about ten minutes, when in all probability it will cough, and then it is the quality or character of this cough that alone can be depended upon. And sometimes after this exertion, if one sits quietly on the manger for some minutes, a slight grunt may be detected. It is at this stage the mistakes are usually made. You are not called in to treat the animal, but, as the district inspector, to decide at once if it is a case of Pleuro-pneumonia ; and if it is, the animal must be destroyed and the owner compensated, or the question may be, can the animal be safely travelled to market or elsewhere ? It is either a case of Contagious Pleuro-pneumonia or it is not, and you are expected to decide the question then and there, without delay or hesitation ; and should you decide in the negative, and the beast be allowed to travel away to mix with other stock, develop the disease and impart it to them, you may rely upon hearing of it again and for some time afterwards.

But when the disease is more advanced, and there is present that dry, husky, painful, short and weak cough, the experienced ear recognises it at once. It is impossible to describe that cough, so as to enable the inexperienced to detect Pleuro-pneumonia. We recognise that it is a cough from lungs that are painful and weak, and not the strong healthy cough that proceeds merely from irritation of the lungs or congestion ; it sounds thin and feeble, and is accompanied by a kind of involuntary weak grunt. By listening to the breathing at the nostrils, very quietly and alone for a quarter of an hour after the animal has been exercised hurriedly, you will detect a faint grunt at every expiration. Of course, at this stage there is loss of appetite ; in some cases diarrhœa, in others constipation; the secretion of milk is decreased, though not invariably. Febrile symptoms are apparent, such as dry nose and hot mouth ; the animal stands with the legs apart and the elbows turned outwards, while progression is slow and laboured, though not always. All the symptoms indicate general constitutional disturbance.

But the disease is not usually allowed to advance so far before the inspector is called in ; and since the Contagious Diseases (Animals) Act has been in operation, or rather since it has been more rigidly enforced, unless the owner gives early notice he does not receive compensation, and is also liable to be fined for concealing the existence of the malady. The restriction in the last Order of Council, of entirely stopping the traffic in cattle, has had the effect of almost stamping out the disease ; it is one of the best orders of the Privy Council ever issued. It certainly demonstrates the very contagious nature of the scourge ; for at first the order for slaughter was not carried out with the same energy as at present, and it often happened that when the disease appeared in one animal of a herd, it was killed, and those which had been in contact with it were sold to a dealer; who would in turn sell some to one man, some to another, perhaps in distant parts of the country, while in the majority, or perhaps, all of them the disease was in the incubative stage, and was consequently propagated by them everywhere they went.

The contagiousness of the disorder has been denied, but the narrative of facts to the contrary must abolish that denial. One fact which I may be allowed to select from my own experience is, I think, very instructive on this point. When an outbreak occurs, the veterinary inspector is called in to determine the nature of the disease. An order for slaughter is given by the magistrates, and then the further responsibility rests with the police inspector, who sees that the animals are slaughtered, and carries out the other prescribed measures. Well, I was requested to examine twenty heifers about eighteen months old, and condemned one as affected with Pleuro-pneumonia. With this my duty terminated ; and the other heifers should either have been killed or kept isolated for the regulated period of thirty days. But they were sold to a butcher who dealt in stock to be killed. A month afterwards

I had to visit two farms, and found Pleuro-pneumonia existing in each. As I generally inquire, when investigating outbreaks of contagious disease, where the fresh stock came from, and can from this nearly always trace the course of the malady, I found from the farmers that in this instance they had purchased heifers from the cattle-dealing butcher, and I then recognised them. I subsequently had an opportunity of questioning the butcher's servant, and was fully confirmed in the opinion that none of the heifers had been killed, but were sold to these farmers, upon whose farms the disease had not previously been seen. From these infected animals the other stock received the contagion, and months elapsed before the farms were rid of it.

(To be continued.)

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of the association was held on September 14th, in the London Hotel, Edinburgh, at half-past two o'clock. Present :—The President, Professor McFadyean, who occupied the chair ; Messrs. Bryce, Stirling ; Dalling, Bathgate ; Young, East Calder ; C. Cunningham, Slateford ; Professor Baird ; and Messrs. Grey, Aitken, jun., Reekie, and R. Rutherford Edinburgh, as well as some student visitors and the representatives of the Press.

The minutes of last meeting were read and confirmed.

The PRESIDENT then explained that an oversight had occurred prior to the last meeting, in not having sent a notice of the same to Mr. Young, East Calder, who had been elected Secretary, and who, in consequence of the oversight, had not been present to assume office. The President expressed regret, and hoped Mr. Young would now assume office, as desired by himself and the other members. Mr. Young declining to do so, Mr. Rutherford accepted the office.

The PRESIDENT then handed round a copy of the Veterinary Surgeons' Bill now passed into law. Some discussion took place on the 15th clause, relating to the "Registration of Veterinary Surgeons non-qualified," which, although not approved of, had to be admitted as unavoidable. Generally the Bill gave great satisfaction, and the members present thought the promoters of it deserved the thanks of the whole profession, as it undoubtedly strengthened their position and legal status.

Mr. RUTHERFORD said it might be well to write to the framers of this Act, expressing their satisfaction at its having passed, and at the same time to point out that it was no fault of the Society that they had sent no reply to the circular issued to the secretaries of associations by the framers of the Act, requesting them to memorialize the Government in its favour.

The CHAIRMAN explained that, at the time the circular in question was received, he had to move a resolution before the Highland and Agricultural Society in favour of petitioning the Government for the amendment of one of the important clauses of the Bill, an amendment which the Council of the Royal College of Surgeons, who were the promoters of the Bill, had refused to adopt. The amendment was to the effect that holders of the veterinary certificate of the Highland and Agricultural Society should be placed on an equal footing with members of the Royal College of Veterinary Surgeons. The resolution in question was carried, and in deference to the Highland Society the Council agreed to the concession, and the amendment was now embodied in the Act. It would thus be seen that it would have been quite

inconsistent on his part to move in petitioning in favour of the Bill when he was at the same time proposing a resolution for its amendment.*

Mr. REEKIE, in the absence of Professor Walley through indisposition, exhibited two morbid specimens, of which the following are descriptions:—

Spindle-celled Sarcoma in the Gastrocnemii Muscle of Cow.—Subject:—An Alderney cow, six years old, imported into Leith in June, 1881. On arrival at port, after over a fortnight's voyage (in a sailing boat), the cow was lying prostrate in the hold, and continued in that condition after landing, and from the symptoms I was led to consider the case (on my first visit) one of Muco-enteritis; but on the second visit (the animal having turned over in the interval) I observed that the left gastrocnemii tendons were relaxed and coiled, a contusion extending through the skin over the point of the calcis to the sheath of the tendons; an abrasion also existed in the same situation on the other hock. Careful examination revealed what I thought from the local symptoms of inflammation was strain (laceration) of the muscles at their junction with the tendons. From the condition of the animal and my experience of the difficulty of dealing with such lesions, I advised slaughter, which was carried out, and at my request the near hind leg was removed about six inches above the hock, and sent to me for examination. I discovered that the knife, in severing the leg, had passed through and made a beautiful section of a localized sarcoma of the gastrocnemius muscle. The characteristics were well marked, the sarcomatous transformation shading off beautifully into the more healthy parts of the muscle. Its centre was softened. There can be no doubt that the animal showed few, if any, signs of the lesion when shipped; but, owing to the stress of shipping, and subsequent struggling in the hold, she had been thrown back on to the points of the calcis, and rested there, thus producing the injuries observed at these parts, and ultimately she became helpless.

Heart—Perforate Ventricular Septum.—Horse.—By W. J. Powell, Kingston-on-Thames. Subject:—Carriage horse, six years old, sixteen hands high. History:—Had always done his work well except on one occasion, when he stopped, appeared distressed, and staggered; but it quickly passed off. Was in good condition. June 11, 1881, he dropped dead, with the groom on his back, whilst at exercise. *Post-mortem* of heart and lungs:—Heart hypertrophied, 13 lbs. in weight. Thickening of and vegetations on tricuspid and semi-lunar valves, especially pulmonary semi-lunar. Pulmonary artery greatly dilated. On examination I found ventricular septum alone sent. An aperture existed in it, resembling, while the section was laid flat, a wide slit ½ inch wide by 2 inches long if septum was stretched in opposite direction, also it measured 2 inches long, but could be easily converted into an oval. A small moderator band passed across one end of the aperture, to which was attached a much larger band with a free end, the latter evidently having been cut from the wall of the heart towards the apex of the septum. Another (circular) aperture existed, ⅜th inch diameter, with a very imperfect valve formed by a doubling of the endocardium. Remarks:—

* This statement of the President of the Society is wholly and absolutely without foundation, so far as the Council of the Royal College of Veterinary Surgeons is concerned; and it is all the more necessary to point this out as it has appeared in several public prints. No communication has ever been received by the Council from Professor McFadyean on this subject, and they knew nothing whatever of his action towards the Bill. It was another of the mines sprung against it without warning, and without the cognizance of the promoters. We refer to the VETERINARY JOURNAL for July, p. 64, and August, p. 146. It may be mentioned that the Earl of Camperdown, who acted for the Highland Society in the House of Lords, opposed Lord Aberdare's motion that veterinary surgeons be exempted from serving on juries.

There can be no doubt that both openings were congenital, as the edges were quite smooth and round, and there was no trace of cicatrization. The only way of accounting for the health of the horse is by assuming that the bands had acted as chordæ tendinæ, and drawn (by their contraction) the edges of the aperture together.

The features of the case, in relation to cyanotic condition, were fully commented upon by the President and Mr. C. Cunningham.

Mr. REEKIE then read an admirable paper by Professor Walley on so-called "Stomach-staggers" in cows, as one of the evils consequent on dairy mismanagement.

It was arranged that the paper be sent to the professional journals, and that it be left open for discussion until the next meeting, when it was hoped Professor Walley would be fully recovered, and present.

The meeting then separated, Mr. Reekie and the President being accorded thanks.

R. RUTHERFORD, *Secretary.*

The following is Professor Walley's paper :—

After vain attempts to enlist a volunteer, I appear before you again to-day in the character of an essayist; but I must candidly confess that I would have much preferred that some other member should have occupied my position, and I must express the hope that at our next meeting we shall have the choice of several papers. The subject which I have chosen for consideration to-day is one of much interest to stock-owners, particularly dairymen, as well as ourselves; and it is one which demands a considerable amount of thought and investigation, in order that we may give satisfactory answers to some of the questions which shall arise. In treating upon this subject I shall not weary you with a stereotyped form of essay, but shall merely make a few remarks of a discursive character, in order to start what I hope may prove a profitable discussion. Certain evils are necessary attendants upon the domestication of animals, and will ever remain so in spite of the efforts of man to do away with them; but there are some which by proper management may be prevented, or, if arising, successfully combated. I do not hesitate to express the opinion that Indigestion and Rheumatism, the latter often the result of the former, to a large extent are the great banes of the cow-feeder in our cities and towns. It is to the more particular consideration of these diseases I wish to direct your attention to-day. The term "Stomach-staggers," in Edinburgh at least, seems to be employed as a very convenient designation for a variety of forms of cerebro-spinal derangement in the cow; and that there is an intimate connection between the alimentary and the nervous functions all must admit; nevertheless there are many instances in which the connection is, to say the least of it, problematical. Under certain conditions, almost all animals suffer from cerebral or spinal derangement as a result of reflex gastro-intestinal irritation. I think I am correct in saying that in no other animal is the connection so well established as in the cow. Man, as I have no doubt many of you are personally aware, suffers severely from gastric Vertigo; the horse has his so-called Stomach-staggers; the dog becomes paralyzed as the result of constipation of the bowels, or epileptic as the result of parasitic irritation of these organs; but an attack of Colic will frequently produce paralysis, and stomach derangement, such as a nail through the parietes of the reticulum or impaction of the omasum will produce a variety of forms of disturbance of the great nerve-centres in the cow, an animal which is popularly supposed to be the most nerveless, but which in reality is the most excitable of all our domestic creatures. In a large and diversified veterinary experience, it has been my fate to have to deal with a variety of forms of stomachic derangement in cattle; but in no other place have I seen such derangement produce so much cerebro-spinal disturbance as has come under my notice in

the byres of Edinburgh and Leith. Cases of impaction of the rumen and of the omasum, induced by a great variety of causes, traumatic disease of the reticulum, inflammation of the abomasum, have frequently come under my immediate observation elsewhere, yet without the attendant nervous symptoms so often met with here. Grass-staggers, or Grass-ill, as it is called, will not be included in these remarks, further than for the purpose of observing that in those seasons in which the rye-grass attains rapid maturity, and consequently the seed quickly ripens, inflammation of the fourth stomach (sometimes one or more of the others) in the ox, and of the stomach and bowels of the horse, is frequently seen ; but doubtless many of these cases are due to the presence of ergot, the effect of which on the alimentary canal and the great nerve centres is well known ; indeed, on looking over the late Professor Dick's "Veterinary Papers," I find such an opinion expressed in the year 1858 by Mr. Baird. I have sometimes thought that the rye-grass seed itself, in large quantities and under special circumstances, might act as an irritant ; but it may be fairly a matter of question whether many of the so-called cases of Grass-staggers are not in reality cases of poisoning by narcotico-irritant vegetables. Indigestion, whether associated with cerebro-spinal derangement or not, is most largely caused in dairy cows by the allowance of an improper quality or an inordinate quantity of food. The digestive apparatus of the ox is more complex, and consequently more readily deranged than that of any other domestic animal, yet it is the one least studied or cared for ; in fact, most people look upon it as a machine whose functions may be called into action without the slightest regard to its powers. Large quantities of draff, often in a state of decomposition or fermentation, turnips in a state of decay or rotten, and potatoes half destroyed by disease, are allowed *ad libitum*, with a certain modicum of meal, chaff, or bran ; and so with sewage and over-ripe rye-grass. Often, too, it seems to be forgotten that the cow chews her cud, and that in order that the function may be performed suitable aliment is required. Moreover, two other very necessary aids to the healthy performance of the functions of the bowels and stomachs, viz., a supply of water and a moderate amount of exercise, are in many instances not allowed ; hence materials which would be cast out of the system as effete by the kidneys are retained, and produce an injurious influence on the blood, and consequently upon the various glands of the body. Still further, that most necessary of all condiments, salt, is frequently withheld, or is forgotten to be mixed with the food ; thus, from ignorance or prejudice, the laws of nature are violated, and the "milking machine" is the sufferer. Again, then, I assert that improper management is the great cause of indigestion, and that this is so is proved by the fact that in properly managed byres the affection and its results are seldom if ever seen, while in others it is no uncommon thing to see three or four cows sacrificed in a single season.

Pathology of Stomach-staggers.—In order to understand this part of the subject, it is necessary to think of the course, symptoms, and *post-mortem* appearances of the affection. In the first place, we may observe that the disease may be ushered in by sudden, violent, nervous excitement, or on the contrary, by nervous depression ; or it may be ushered in by the usual symptoms of illness, such as lassitude, inappetence, suspension of rumination and lactation, with diarrhœa, or, indifferently, constipation. Should the latter symptoms take precedence, they are quickly succeeded by evidence of nervous derangement, such as shivering, or clonic spasm of a muscle, or particular sets of muscles. Disorders of locomotion may follow, finally terminating in motor paralysis (partial or total) of the hind quarters, the animal making frequent attempts to rise, and after staggering about, falling helplessly ; eclampsia, epilepsy, catalepsy, and tetanus may, either separately

or conjointly, be developed in the course of a single case, and when the two former symptoms appear we have their usual concomitants: contraction of the facial muscles, foaming at the mouth, champing of the jaws, and gnashing of the teeth ; hyperæsthesia of the skin is common. In other cases, as I have already indicated, there is great depression of nerve force, which may be induced slowly or gradually, and the animal sinks into a complete state of coma. In one instance I had examined and given directions for the treatment of a cow, and before I had proceeded 300 yards from the byre I was hastily summoned to return, the messenger stating that another cow (which I had observed to be somewhat dull during my visit) had fallen suddenly down ; she passed into a complete state of coma in a very short space of time. The course of the affection—like its invasion—is sometimes rapid, at others prolonged ; it may, in fact, take on, so far as the nervous symptoms are concerned, sub-acute characters. On *post-mortem* examination we may find satisfactory evidence of important gastric derangement, in the shape of impaction of the omasum with dry and hard material, or of inflammation or hyperæmia of the mucous membrane of one or more of the stomachs. On the contrary, such conditions may be entirely wanting, the evidence of circulatory disturbance being very slight, and the ingesta in a pultaceous state. If our attention be directed to the state of the great nerve-centres, we shall in all probability find tangible evidence of vascular derangement, in the shape of serous effusion, congestion, or apoplexy. More especially are the two latter conditions seen, in conjunction with the vessels of the medulla, oblongata, and cerebellum, and, where coma has been marked during life, of the cerebrum. The physiological opposite of hyperæmia, viz., anæmia, may exist, but in my experience the former condition is the most common. In drawing deductions from the foregoing remarks as to the pathology of Stomach-staggers, we have many difficulties to contend with, the most important of which is the fact that very opposite conditions of the cerebral circulation will bring about similar results. In the majority of cases there can be, I think, little doubt that the motor disturbances depend primarily upon a peripheral irritation, viz., an irritation located in the stomachs and intestines, and that this irritation produces an altered condition in the nutrition or circulation of the brain, medulla, oblongata, and spinal cord, collectively or separately. As I have already indicated, where coma sets in with sudden paralysis, we shall find congestion or apoplexy, but whether the failure on the part of the blood-vessels to carry on their function is due entirely to derangement of the vaso-motor centres, as the result of peripheral irritation, or to the blood supply being of an improper quality, must to some extent be left an open question. The eclampsia is probably largely due to vascular engorgement ; in some instances it may be the result of an opposite condition, viz., anæmia ; in others, to thrombosis of the vessels of the cerebellum. The complex arrangement of the blood-vessels may to some extent explain the readiness with which disturbance of the cerebral circulation is brought about in the cow. In some instances where I have failed to discover marked gastric or intestinal irritation, and where a number of cases have occurred simultaneously, I have been inclined to look upon the affection as resulting from the generation of some narcotic principle in the draff, owing to its being allowed to undergo chemical changes. This, however, I am bound to say, is merely an hypothesis, and in one instance a very careful investigation made by Mr. Shearer in the chemical laboratory of the college, failed in bringing to light any substance which could be accredited with the possession of a toxicological action.

Treatment and Prevention.—In all cases where treatment is decided upon (though in town dairies, if the animal is fit for the butcher, the pole-axe is the most desirable remedy), the early removal of the irritant contents of the

alimentary canal by stimulating cathartics, is advisable, in many instances all that is necessary. Clonic muscular spasms, eclampsia, or epilepsy may be combated by potassic bromide, conium, chloral, or belladonna; coma, with bold internal stimulants, and the external application of irritants to the poll and spine, with cold affusions or ice to the frontal region. Antiseptics, such as soda, hyposulphite, or oleum terebinth, should be at once administered if there is evidence of chemical change in the gastric contents; bleeding, unless to a moderate extent, and in the early stages, can be productive of no benefit. I have sometimes been tempted to have recourse to intravenous injection of ammonia. *The principles of prevention* may be gathered from a careful study of the causes of the affection. They are the avoidance of over-gorging, the judicious admixture of different kinds of food, the allowance of sufficient water, and, where practicable, of exercise; the addition of salt, and when it is of a constipating kind, treacle or linseed oil to the food, with a little spice.

I have, so far, only considered the effect of mismanagement on the gastro-intestinal functions. I will very briefly direct your attention to the existence of another great enemy to the town dairyman, viz., Rheumatism, to which painful affection hundreds of town cows yearly become victims. Here, again, high feeding, enforced idleness, and the absence of any stimulus to the due performance of the function of the excretory organs, may be accredited with the production of a grave abnormal condition of the system, which too frequently results in the permanent disablement of good animals.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual Quarterly Meeting of the above Association was held in the "Turk's Head" Hotel, Grey Street, Newcastle-on-Tyne, on August 26th, 1881, Mr. Mulvey, President, in the chair. Present:—Messrs. Dudgeon and Mitchell, Sunderland; W. Wheatley, South Shields; A. Chivas, Corbridge; M. Hedley, Darlington; J. E. Peele, Durham; W. W. Smart, W. Hunter, J. H. Wilson, W. S. Pringle, and C. Stephenson, Newcastle-on-Tyne. Visitors:—Messrs. Davey and Potts.

The minutes of the previous meeting having been read and confirmed, Professor Walley was unanimously elected Honorary Associate, and Messrs. C. Hunting and C. S. Hunting, South Hetton; J. E. Peele, Durham; and W. W. Smart, Newcastle-on-Tyne, as members.

The PRESIDENT then read a letter from Professor Walley regretting his inability to be present, and including a few remarks on Thrombosis, which led to a very interesting discussion.

Mr. W. HUNTER then read his paper on "Parturient Apoplexy." He said it was a disease which may affect any of the domesticated animals, as the mare, ewe, sow, or bitch, but more particularly the cow; and to the latter animal he confined his remarks. It was a disease which attacked heavy milkers in good condition, causing congestion of the brain and spinal cord, with suppression of the lacteal secretions. That he disagreed with those who thought it was due, first, to indigestion; second, derangement of the sympathetic nervous system; third, that it was purely a blood disease. But now that Plethora is classed as a blood-disease, he agreed that it is a blood-disease liable to attack heavy milkers who are in a hypercemic condition at the period of parturition. The animal, being a heavy milker and big in condition, calves; a sudden change in the system takes place. The blood which supported the fœtus *in utero* is directed to the mammary gland; that organ, not fulfilling its proper function, the blood flies to the brain, producing Apoplexy. After carefully describing the symptoms and *post-mortem* appearances, he said the treatment was not satisfactory, the percentage of deaths

being high. He always bled to the extent of three or four quarts, even if the animal was unable to rise, to relieve the excess of blood in the system and to facilitate the absorption of medicine ; gave opening medicines, combined with stimulants ; applied mustard to the spine and cold water to the head, and kept the animal lying in as natural a position as possible. Prevention was much better than cure, and he recommended daily exercise before calving ; opening medicine, and, if in high condition, bleeding to the extent of three or four quarts a few days before calving, and immediately after calving a good dose of opening medicine. In concluding his remarks, he thought that when animals were properly bled and dressed by a butcher, and not having had a large quantity of medicine, that the flesh of such animals, if slaughtered within a few hours of the commencement of the attack, and the animal only suffering from pressure on the brain and spinal cord, it is not inconsistent to think the flesh is wholesome for food and not detrimental to health.

In the discussion which followed, Mr. DUDGEON said he did not believe in bleeding, and never saw one recover after it. He had had most success with stimulants.

Mr. HEDLEY had seen a great deal of the disease, and thought that bleeding did no good when the disease had attacked the animal. His practice was to give a bold aperient, then stimulants, and place setons behind the poll when in a comatose state. He gave aconite with good results. As a preventive, he bled two or three days before calving.

Mr. PEELE had also seen a great deal of the disease. He thought it was due to plethora, and that preventive treatment was most important. He recommended plenty of exercise and purgative medicine, both before and after calving ; had seen cows recover after bleeding, and without it ; was now against it ; gave purgatives, stimulants, and attended to the general comfort of the patient. If the purgatives acted the patient generally recovered ; when in the comatose state he gave medicines by the stomach pump.

Mr. CHIVAS thought it was most important to keep the animal in a natural position ; gave opening medicines and aromatic spirits of ammonia. Had never seen a case recover after bleeding. A case recently came under his notice which occurred ten days after calving.

Mr. WHEATLEY would bleed, blister the spine, give opening medicines and stimulants.

Mr. MITCHELL would, in the early stages, bleed to the extent of three or four quarts, give a large dose of ammonia with purgatives, and attend to the general comfort of the animal.

Mr. SMART thought that in this disease enemas were very important, and recommended them ; and bleeding in the early stages ; then a bold aperient, to consist of aloes in solution, and stimulants.

The PRESIDENT had witnessed a great deal of the disease, and had seen animals get better under all kinds of treatment. He had most faith in stimulants.

Mr. STEPHENSON asked the opinion of the meeting as to the advisability of using the flesh of animals slaughtered when suffering from the disease, He thought it was not fit for food. He would also like to know if the disease was seen in mares, ewes, and bitches, as the essayist had said, and, further, if the disease began in the centre or the extremities of the nervous system.

Mr. PEELE thought it was the spinal cord that was first affected, because we always find the hind extremities attacked first. With respect to the cases that had been mentioned as occurring before calving, they were not true cases of Parturient Apoplexy, but simply Paralysis cases, which generally do well.

Mr. CHIVAS had seen a great many of these so-called cases before calving, and agreed with Mr. PEELE that they were not true cases of the disease.

Mr. DAVEY advocated the use of stimulants in small and frequent doses, rather than in large and occasional doses.

Messrs. PEELE and PRINGLE had seen cases in the bitch.

Mr. DUDGEON spoke of the importance of having a decided opinion respecting the use of the flesh as food, upon which the feeling of the meeting was equally divided, after an animated discussion.

Mr. HUNTER, in replying, thought the disease began in the medulla oblongata and cerebellum, and not in the spinal cord. In his opinion the flesh was fit for food.

A vote of thanks, moved by Mr. DUDGEON, seconded by Mr. PEELE, and supported by Mr. HEDLEY, was passed, to Mr. Hunter for his paper; also to Mr. Mulvey, as President. Both gentlemen returned thanks, and a very interesting meeting terminated.

Mr. J. B. Nisbet has kindly consented to read a paper at the next meeting.

GEORGE E. ELPHICK, *Secretary.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Wednesday, September 28th, 1881. Alexander Lawson, Esq., President, in the chair.

Present:—Messrs. Peter Taylor, T. Greaves, John Lawson, T. Hopkin, W. A. Taylor, J. B. Wolstenholme, E. Faulkner, Tom Taylor, W. Dacre, J. Kirkham, W. Noar, T. Horrocks, A. M. Michaelis, and Samuel Locke, of Manchester; T. Dollar, London; W. Leather and J. W. T. Moore, of Liverpool; W. Whittle, Worsley; Wm. Woods, jun., Wigan; J. C. Atkinson, Stockport; J. B. Taylor, Ashton; H. Fergusson, Warrington; T. Briggs, Bury; T. B. Stone, Walkden; E. Luck, Worsley; W. G. B. Dickenson, Lincolnshire; and J. Storrar, Chester.

Letters were received from the following gentlemen, regretting their inability to attend the meeting:—Messrs. C. W. Elam, R. S. Reynolds, A. H. Darwell, Geo. Morgan, J. Marshall, H. Thompson, Wm. Broughton, and Professor Pritchard.

The minutes of the last meeting having been duly read and confirmed, the following gentlemen were unanimously elected members of the Association:—Mr. J. W. T. Moore, of Liverpool, and Mr. E. Luck, of Worsley.

Mr. WHITTLE nominated for membership Mr. W. Woods, jun.

Mr. GREAVES nominated for membership Mr. J. Storrar.

Mr. T. DOLLAR then proposed, "That the members of the Lancashire Veterinary Medical Association present express their deep regret that the communication in the VETERINARY JOURNAL of this month (September), headed, 'Enemies in our Midst,' and signed, 'Lancashire,' should have been written and published, as it must be detrimental to the best interests of the profession, by lowering its tone and stirring up dissension and ill-feeling, and thereby damaging it in the eyes of the public."

Seconded by Mr. TOM TAYLOR.

Mr. J. GREAVES proposed, as an amendment, "That the discussion of this subject be postponed until the next quarterly meeting."

Seconded by Mr. JOHN LAWSON.

After considerable discussion, a poll was taken of members present, when 11 voted for the amendment, and 11 voted for the motion.

The vote of the Chairman was then given in favour of the amendment, which was therefore carried.

Mr. HOPKIN then read a very interesting paper, termed, "An Abstract of Lectures and Essays on Micro-organisms, more especially in relation to Splenic Fever, Black Quarter, and Fowl Cholera."

An animated discussion followed, in which nearly all members took part; after which a cordial vote of thanks was proposed by Mr. E. FAULKNER to Mr. Hopkin for his laborious and concise paper; seconded by Mr. W. A. TAYLOR; carried unanimously.

A cordial vote of thanks was also accorded Mr. R. Thompson, of Aspatria, for letter sent by him in relation to the above subject.

A vote of thanks to the Chairman closed the meeting.

SAM. LOCKE, *Hon. Sec.*

Obituary.

THE death is announced of James Wilson, M.R.C.V.S., of Douglas, Isle of Man, who graduated in 1866. Also, of I. Riches, M.R.C.V.S., Army Veterinary Department. Mr. Riches graduated this year, and had only joined the Department at Aldershot about a month, when he was attacked with rheumatic fever, to which he succumbed. He was a very promising young officer, and much esteemed by the officers of the Department, as well as those of the Artillery, to which corps he was attached.

Army Veterinary Department.

Gazette, September 30th.

VETERINARY DEPARTMENT.—S. M. Smith, Gent., to be Veterinary Surgeon on probation.

Gazette, October 4th.

VETERINARY DEPARTMENT.—To be Veterinary Surgeons, First Class.—Veterinary Surgeons A. E. Queripel, F. Garratt, J. A. Woods, C. Clayton.

Correspondence, etc.

THE PATHOLOGY OF NAVICULAR DISEASE.

DEAR SIR,—I have neither time nor inclination to enter into any controversy with Mr. Broad with reference to the pathology of Navicular Disease. In his first letter to the Journal he wrote in a calm and scientific manner in support of his theory, which differed from that of those who spoke at the Southern Counties meeting; and I, for one, admired the able way in which he argued the point at issue; but in his last letter his enthusiasm for science and desire to gain his point have led him into personalities. We cannot approve of his positive and, I may say, offensive style of enforcing his opinions and theory upon us. He seems to have written in a style of "what I say must be right, and whoever differs from me must be wrong." It reminds me very much of a man who, while walking along the country

roads, used to talk aloud to himself, and when asked why he did so replied that "he always liked to hear a sensible man talk, and he always liked to talk to a sensible man." So Mr. Broad writes letters to the Journal, and answers them himself. He taunts Mr. Barford with not having specimens to support his opinion, notwithstanding the bold statement he made in reference to the disease commencing in the synovial membrane thirty times to once of its commencing in the bone. He adopts the same style to Messrs. Fleming and Greaves, insinuating that they made a coloured statement. But we simply gave the result of our practical experience and observation. Surely he will give us credit for being as conscientious in expressing our opinions as he is himself, and for possessing a small portion of that vast intelligence he appears to possess! Mr. Fleming produced the specimen at the meeting, for the purpose of discussion, and contended that the disease commenced on the under surface of the navicular bone, which is in contact with the perforans tendon, and all the gentlemen named supported that opinion. Mr. Broad, in attempting to refute Mr. Barford's theory, that the disease commences in the synovial membrane, says that cannot be, as there is no synovial membrane covering articular cartilage. But I presume he will admit there is a synovial bursa between the perforans tendon and navicular bone, secreting synovia to lubricate it, just as there is in other similar places where there is much motion and friction, as the point of the calcis, and between the perforatus and perforans tendons, etc., below the knee. Nor do I think it assists us much in discovering the true pathology of this malady, whether the infero-posterior surface of the bone is covered with hyaline or fibro-cartilage. As Professor Spooner taught us that the disease commenced as caries in the centre of the bone, I was somewhat astonished when I first discovered disease on the under surface, which induced me to seek for other morbid specimens, and make many *post-mortem* examinations. I was very partial to unnerving horses, and had bones in all the stages of disease; but always having pupils, these fell into their hands and were lost. I have enclosed the bones for your examination that I sent to Mr. Broad. One where the disease is too far advanced to say with any degree of certainty where it commenced, the one where the horse had just begun to go "stumpy," I sent to him for examination under a microscope, as I had not one; but I do not think he examined it microscopically. I could not detect the disease in the centre of the bone with the aid of a powerful magnifying-glass, which he says shows early signs of Navicular Disease by the enlarging and breaking down of the cancelli. But the bone which I wished to particularly draw his attention to has the roughened under surface, to which the tendon was strongly adherent, and required considerable force to tear it away. I have seen a great many similar cases, which is a sufficient proof to my mind that the disease commences on the under surface. Mr. Broad says that on making a section of this bone he found the whole structure to be porcellaneous; but it was not to any great extent, as the naked eye could not detect it, only with the aid of a magnifying-glass. The disease was much greater on the outside than the inside, as it is very evident and clear there; but the porcellaneous structure is very slight, and difficult to detect, clearly showing the disease commenced on the surface, and is extending to the interior.

Why should this bone be more prone to inflammation and caries than any other in the body, unless it is produced like curb, sprained tendon, and suspensory ligament under the knee, where the leverage and strain on the tendon are greatest? The leverage, too, would be on the perforans tendon, just where it passes over the navicular bone. We then get strain and rupture of some of the fibres, with inflammation implicating the bursa and

bone, which is the commencement of the Navicular Disease. If the malady arises from hereditary predisposition it may, perhaps, commence in the centre of the bone ; but I have seen no proof of this. We have shown Mr. Broad bones in which, in our opinion, the disease has commenced on the lower surface ; but he has not shown us any of his to clearly prove to our minds that it commences in the interior. I do not suppose if we continued to discuss the subject we should alter Mr. Broad's opinion, nor would he influence ours ; but I may remark that his is only theory, as he has no more proof than we have where the disease commences. The opinions we expressed at the meeting were the result of our own practical experience and observation, which are quite equal to his far-fetched theory, however much he may attempt to ridicule us.

Yours truly,

Rochester, *October* 15*th.* J. B. MARTIN.

THE VETERINARY CONGRESS, 1881.

DEAR SIR,—It is very gratifying to hear that Professor Walley has reasonable excuse for his absence from the Congress meeting. I censure no one. Each and every professor at our schools may have reasons for their absence, but the absence of, or *dearth* rather of professors at the Congress was lamentable and unfortunate. The object of the meeting was the collection of the sages with the practitioners, and the countenance of the professors of the schools was desirable, but not indispensable. I am delighted to know my friend Mr. Walley was unavoidably absent.—Faithfully yours,

London, W., *Oct. 3rd*, 1881. ROBERT WARD.

PUPILAGE.

MY DEAR SIR,—I observe that at the meetings which have been held by the various Veterinary Medical Associations, and reported in your Journal, the question of pupilage has been prominently discussed. No reference has, however, been made to the reasons which influenced its adoption by the promoters of the Charter of 1844, or the failure of the first Members of Council to carry out their bye-laws on this subject.

Perhaps you will allow me to make a few observations on these points, which form now a matter of history, considering the state of veterinary education in this country. The promoters for the obtainment of a Charter were desirous to unite its individual members in one body, and to obtain powers for its directing Council to frame laws for its guidance, as well as for the education and examination of the *future* students, who should enter the respective schools for the purpose of instruction in the various branches of veterinary science. They were given to understand by the Under Secretary of State for the Home Department, that the Draft Charter of 1844 contained all the provisions necessary for this purpose which Her Most Gracious Majesty would confer. Accordingly, the first bye-laws for the regulation of the College, and the examination of future pupils at the then veterinary schools, were framed and adopted, but, as you are aware, not without considerable opposition. The question of pupilage formed the great source of future discussion.

"It was asserted that the Charter contained no power by which it could be carried out ; that it would inflict considerable pecuniary loss on the two veterinary schools ; that it would prevent numbers from entering the profession, because there were not sufficient numbers of respectable veterinary surgeons in existence that a parent would care to place his son with as a pupil."

The Highland and Agricultural Society most strongly opposed the matter. The Charter, which had cost upwards of £1,000 to obtain, was placed in the greatest peril. But the Council, after consulting with their solicitors and several leading barristers, wisely determined to let the matter drop, and so it has continued until this period, when the veterinary profession occupies a far different position from what existed prior to 1844. We have now four veterinary schools, in which the education of the veterinary pupil is most efficiently carried out; more so, I am sorry to add, than the system of *examinations laid down by the Council of R.C.V.S., who limit its extent, so that the examiners have not time to test the pupil in the manner that he ought to be, and which would ensure a proper safeguard as to his knowledge and practical ability.*

Besides these facts, it must be borne in mind that the Royal College of Surgeons no longer require pupilage, nor is there any employment for the pupil with a veterinary surgeon in the compounding of medicines, which used to be the case. They can be procured from the chemist ready compounded. I sincerely hope that the Council of the Royal College of Veterinary Surgeons are not going again to launch the profession on a sea of trouble and cost. We have obtained our Act of Parliament, and I, with others, are thankful for it, as well as to those who have helped forward the good work. Let us have peace, and above all, let our bye-laws be carefully revised, submitted to the consideration of the law officers of the Crown, and abided by.

Yours sincerely,

THOS. WALTON MAYER, F.R.C.V.S.,
Half-pay Royal Engineers,
Late Professor of Veterinary Medicine and Surgery,
Royal Agricultural College, Cirencester.

Aldershot, *October 13th*, 1881.

THE VETERINARY SURGEONS ACT, 1881: AN INSTANCE OF ITS PUBLIC ADVANTAGE.

SIR,—The suppression of ignorant pretenders must prove a boon to the public, and as an instance, we quote a report from the *Morning Advertiser*, of Thursday, the 22nd September.

MARYLEBONE.

Henry Wooton, farrier, of 58, Princess Street, Edgware Road, *James Fox*, carman, 25, Devonshire Court, Lisson Grove, and *Wm. Herrage*, carman, 20, Church Place, Harrow Road, were summoned by Michael Kennedy, an inspector of the Royal Society, for causing cruelty to a horse.

Mr. S. Abrahams, solicitor, prosecuted; Mr. C. A. Pope defended.

Fox, in Herrage's employ, delivered a load of a ton and a half of lime at Westminster, on the 22nd ult., and on returning down Edgware Road, Kennedy, the inspector of the Society, saw the horse excessively lame on the near fore leg, hobbling along, and scarcely able to work, the muscles of the leg swelling up to the knee, and the animal suffering very much pain in the leg. The tendons were swollen, and the animal resisted all efforts to make it stand on that leg. The animal was led home, and three days after the officer saw it accompanied by Mr. Ward, veterinary surgeon, of Dudley Place, Paddington, and then found that the defendant Wooton, whose name was not on the roll of veterinary surgeons, had been attending it. He had blistered both fore legs, which Mr. Ward stated was an act of unnecessary cruelty. The near fetlock joint had knuckled over, making the horse unfit for doing work.

Mr. Ward said the animal would never recover from what it was suffering from, and blistering the sound leg, and thereby causing great swelling and pain, was an act of inhumanity and cruelty. It was useless also to blister the bad leg. No properly qualified person would ever adopt such a course, although old farriers might have done so. In this enlightened age people would never think of doing it.

Mr. William Hunting, Government inspector and professor of anatomy, said it was an act of cruelty to send the horse out in the state described. Blistering a sound leg was a piece of gross and ignorant cruelty, and it was useless to blister the bad leg.

Further evidence showed that Wooton had said both legs were blistered in order that the animal should not throw its whole weight on one leg, and thus prevent the tendons of one leg being contracted.

For the defence it was urged that the animal had met with an accident, but had been kept in a fortnight previous to this occurrence, and on the latter day it again met with an accident, but it was all right when sent out with the load.

A veterinary surgeon said it was not a bad practice to blister the legs. It gave pain, but he could not say it was cruelty.

Mr. Mansfield said the case against Wooton was very bad indeed, for he acted from ignorance and stupidity, and perpetrated a great act of cruelty on the animal. There were plenty of skilful veterinary surgeons in the world to do the work properly, and without causing any pain, but there were a lot of stupid people who caused great pain and frequently killed the animal. The practice there shown should be discouraged as much as possible. Wooton would be fined 40s. with 23s. costs, and Herrage 10s. with 23s. costs. The summons against Fox he would allow to be withdrawn.

Here is a case of "knuckling over," or in other words, partial dislocation of the fetlock joint of the near fore leg, and chronically so. It is admitted that the animal had been lame and rested for a fortnight. On resuming work a ton and a half of lime in a heavy van is the load by which the poor animal is to be tested.

It becomes again desperately lame; the Royal Society's officer observes the case, and with some judgment brings it to the police court—not with the owner and his carter alone as guilty, but with the defendant Wooton, an empiric, for having tortured the poor creature by blistering the lame near fore leg and the *off leg also, severely*, which being sound did not require blistering, but to prevent the horse having a leg to stand on, the blister was applied. Imagine the poor wretched animal "resisting all efforts to make it stand on the lame leg," having a strong blister applied to its sound leg to prevent it from standing upon the leg—*to prevent the tendons of one leg being contracted.* Thus the animal was found by the officer when he went to see the animal, accompanied by Mr. Ward, and the animal was tied to the rack.

Comment is not needed. It is to be trusted that the lesson taught will not be forgotten, and the remarks by the learned magistrate, who said, "There are plenty of veterinary surgeons in the world to do the work properly." The public are really most to blame for employing an empiric; but these are employers, and the new act referred to will, in due course, have its effect, to stay such instances of ignorant stupidity and cruelty.

The assistance given to the profession by the R.S.P.C.A., through the Secretary, Mr. Colam, in advancing the Bill, is only another instance of the far-seeing policy of the Society in stamping out cruelty.

Yours truly,

R. WARD, F.R.C.V.S.

THE UNIFORM OF THE ARMY VETERINARY DEPARTMENT.

SIR,—In a short time probably all, or nearly all, of the old regimental veterinary surgeons will begin to think about providing themselves with the departmental uniform; and as one who has worn it for some time, will you permit me to suggest a few alterations which I think would be improvements, and in the end effect a slight economy. To begin with, the narrow velvet facings on the cuff, though very handsome, are a continual trouble. They are easily soiled, and soon become tarnished and old-looking, in addition to the colour harmonizing badly with that of the stripes on the undress

overalls, etc. I would suggest that the facings be worn on the collar only. The present forage cap might be improved and made more useful and distinctive, by the addition of an embroidered peak and the substitution of a gold band having one or two narrow maroon silk stripes woven in it. A maroon and gold purl button on the top of the cap with tracing of gold and maroon braid. This would be a handsome cap ; and, as a tendency towards peaked caps for all branches of the service appears to be returning, it would perhaps save some of us a little if the change were anticipated.

Officers might also, as an optional arrangement, be permitted to wear the frock-coat. This would enable those who have them—and there are many—to utilize one more article of their old uniform.

The above are simply the ideas of a few in addition to myself, and may not perhaps be approved by all ; but I think a large majority will agree with the few suggestions I have made.

I heard a short time ago that it was in contemplation to abolish the "cocked hat" for all; so would advise those who have not yet provided themselves with the article in question to inquire before purchasing.

I am, sir, yours very truly,

(LATE) "UBIQUE."

THE COUNCIL OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

SIR,—I have no intention of taking up the subject broached by "Lancashire" in the JOURNAL for September, though I feel inclined to agree with much of what he says. I would rather adopt the course advised by Mr. Mulvey and yourself, in the October Journal, and let by-gones be by-gones. In doing so, however, I think the lesson given recently should not be lost sight of, and is hinted at by "Lancashire." It is the urgent and absolute necessity for the profession sending to the Council the best men we can find in its ranks. By "best" I do not mean the best practitioners, but the most intelligent, honest, loyal, and "gentlemanly" men (in word and deed). What can we expect if we send those who are known to be opposed to all progress, who sneer at every effort to improve our position, who are so hopelessly stupid that it would require more than an operation on the cranium to make them understand anything, or who are animated by feelings of bitter malice against those who desire to benefit us? These men should hold no place at the Council. The experiment of patting disloyalty on the back and rewarding it, in order to make it loyal, by introducing it to the Council meetings, and at the expense of the loyal, has most signally failed, and will always fail. The profession cannot afford to have the Council-room converted into a bear-garden by men who labour under one or more of the above defects or vices ; and, therefore, it should take the utmost care that it sends its *best* men in every sense of the word. If such a clique exists as is alluded to by "Lancashire," then it should be pushed to one side as not only useless, but dangerous to the entire community. It should be stamped out. I personally thank you, Sir, for the magnificent results which have attended your endeavours to raise our science. I am almost appalled at the wonderful progress made under your leadership, and find a difficulty in realising it. But most of all, perhaps, do I thank you for allowing the free expression of opinion in the JOURNAL you so ably and impartially edit.

Yours sincerely,

October 10th. "HALF-A-CENTURY IN PRACTICE."

SHOULD VETERINARY ASSISTANTS BE ENTITLED TO REGISTRATION?

DEAR SIR,—In the *Veterinarian* I notice several letters from gentlemen who have been engaged as unqualified assistants, who state that they have been unable to qualify on account of the peculiar circumstances under which they have been placed. They appeal sympathetically to the profession, asking that they may be admitted on the register as "existing practitioners." I submit that, however much we may pity them, it is clearly the duty of the Council to allow only those to be registered who have obtained a livelihood in practice on their own account. And I translate Section 15 of the Veterinary Surgeons' Act to be as I have stated. If it were allowed that they should be registered, those men who have been employed for many years as dispensers and nurses, or to use a recognised term, "running doctors," would all apply. It is rather a difficult matter to define the meaning of the word "assistant." These men assist their employers in their practice, and would necessarily, I think, come under that designation. And referring to those men who have been debarred entering the college, because they have been suffering from pecuniary inability, I maintain that this is not a matter for our consideration. But, in passing, I would say that the fees, etc., are not so dreadfully heavy, but that by dint of perseverance, etc., they might save sufficient from their salary to enable them to overcome that obstacle. And I have known several men in the medical profession who have assisted surgeons out of hospital hours, thereby keeping themselves at the college. Then, I ask, why cannot they do the same? I may further state that there are men now studying at St. Pancras who are assisting veterinary surgeons in the above manner. By allowing these men to be registered in the way they wish, the Council would be placing before the public individuals as veterinary surgeons who had very slight, if any knowledge, as to physiology, anatomy, etc.—in a word, the parties themselves would be in an awkward position.

I am, yours faithfully,

LEX.

MR. PALLIN AND THE ARMY VETERINARY DEPARTMENT.

DEAR SIR,—Mr. W. Pallin's letter in the penultimate issue of the *Army and Navy Gazette* anent his retirement from Her Majesty's service, is very apt to mislead those who contemplate joining the department. As I have been asked on several occasions by would-be candidates, to give my opinion as to the *locus standi* and other conditions generally affecting the officers of the veterinary department, I feel bound to offer a few remarks on the above gentleman's letter, and the strictures therein advanced. In the first place, I must take exception to his remark respecting the members of our department not daring to raise their voices. I think you will agree with me, Mr. Editor, that our grievances have been fairly well discussed in your columns, and that I, at least, have contributed my *quota*. So where is the system of *gagging?* But whatever has been stated by myself, and I may say by others, has been for the benefit of the department; and although the few irregularities which have been pointed out are certainly detrimental to us, no animus has been evinced. Mr. P. must bear in mind that in legislating for the many, some few will raise their voices against what has been done. The question is not whether the minority will suffer, but whether the majority will benefit. Referring to the particular grievance which Mr. P. so graphically describes, I have no hesitation in stating that the number of sufferers will scarcely assume tangible proportion; and that the departmental system will

not be such a miserable failure as this gentleman predicts. On the contrary, fair play will come into operation, especially in relation to that important condition of our lives, "Foreign Service." Has it ever occurred to Mr. P. how manifestly unfair it was for some of the department to be grilling out in India, whilst those in cavalry regiments and in other snug appointments in England, never saw a day's foreign service? Under the present *régime*, I take it, all are working on the same lines, and for the future there will be no complaint of this nature. Had most of Mr. P.'s service been in India, and by the former arrangements, which happily are now swept away, he was unable to return to England, except on medical certificate, under eight or ten years, then he might have complained. I am afraid he has been a little too precipitate, but hope he will not repent this rash step.

The majority of veterinary officers being in favour of the present system, we may expect a loud cry from the few discontented ones; but those in authority, working for our weal, can afford to ignore the puny pipings of malcontents. *Experientia docet* is the maxim on which I ground my statements. During the former part of my career I was a regimental officer, but selected the departmental system, after mature consideration, as being the most conducive to my welfare. The only disappointment I experienced at the time was, that the system did not at once become universal, for it placed those who had selected this mode of administration at a considerable disadvantage in regard to foreign service. Now we are all on a par, and we each have, or ought to have, equal advantages in this respect. Those who know me best will tell you that I never object to taking my whack of duty, however arduous; but it was rendered doubly irksome by the thought that others were enjoying their *otium cum dignitate* when they so little deserved it. Mr. P. forgets all these things, and if "Ten Years in India's" statement in the last issue of the *Army and Navy Gazette* is true, the first sting he (Mr. P.) receives from the whip is resented by his leaving our ranks; and if, as he states, others are prepared to follow his example, the machine will not break down. It is better, I opine, to have contentment, although we lack standard of merit (?). Mr. P., and others who are of the same opinion, must remember that the service was not created solely for their convenience, but that they are expected to practise a certain amount of self-denial and compliance to the commands of those who presumably are acting for our benefit. Mr. P.'s allusion to the case of his brother is not a happy one, for, if I remember correctly, he was originally in the department, and when at Bangalore, Madras, asked for and received the appointment to the 14th Hussars. He did this with his eyes open, knowing the forces in operation and their expected results. His brother merely reverts to his former position, so it cannot be considered a hardship in his case.

I do not wish to occupy your valuable space in discussing the unification system *versus* the regimental one. This subject has been *en evidence* for a long time past; but I may be allowed to state that by the change we are better paid, the system is more under the control of men of our own cloth, foreign service can be regulated to a nicety and carried out without any apparent hardship, and we are exempted from the petty annoyances of some swaggering commanding officers. The stand-points of the advocates of the regimental system are, that we lose, what is termed, our homes and our popularity. I fail to see this reasoning. In the first place, the P.V.S. can have no possible reason for removing an officer from his appointment so long as he conducts his duties in an efficient manner, and his bearing generally is in accordance with his position. As soon as his turn comes round for foreign service, it is but natural that he should make way for those who have already undergone the process of grilling. In the second place, our popularity is not added to one jot or tittle; no system in the world can make

a man popular unless the initiation, as it were, emanates from himself. Instead of the unification system being a drawback in this particular, I look upon it as a God-send ; for it was not at all an uncommon case for a man, although he had rendered himself unpopular either in a social or professional sense, to hang on, much to the disgust of his brother officers. They were compelled to tolerate his presence, for the simple reason that they had no means of getting rid of him. Now, however, we have a parent trunk, who undertakes all these little duties ; and if a man does not pull together with his immediate associates, it is soon known, and the P.V.S. does for him what he would not have had the courage to perform for himself, *i.e.*, removes him to a more congenial clime. By these means the head of the department can select tact and ability for appointments demanding such qualifications. Our P.V.S. may, in fact, be likened to an engineer who, while watching the elaborate workings of the machine under his care, changes a bolt here and a nut there, adding, by way of lubrification, a word in good season, until the whole structure works in harmony. If perchance any integral part does not fit, or the metal is not properly tempered, he changes it for one which beds without difficulty and is equal to any pressure, until at length we witness velocity without friction, and that mathematical precision so characteristic of modern science, the whole being driven at a minimum expenditure of force. This consummation has not yet been reached, but there is no reason why it should not. It certainly cannot happen, if the various members of the machine are so rebellious that no amount of adjustment can bring about rectification. Steam hammers are useless where common sense is absent!

Service in India is certainly unpopular, owing to circumstances beyond the control of the heads in this country. The head of the department in England may be ever so willing to do all he can to further our interests in that distant land, but is in a measure powerless to overcome such indignities as those practised lately, in the case of Dr. Evans *v.* Cunningham. I happen to be well acquainted with several of the leading military spirits in India, and the workings of our department have from time to time cropped up in conversation. They all agree that some reform is absolutely necessary for the amelioration of our condition, but the question is, how is it to be accomplished ? I am not conversant with the exact power our P.V.S. in England possesses in India, but the sooner, if such is not the case, the department in all its bearings comes under his direct control, the better for all concerned. The amalgamation of the British and Indian veterinary departments for some time caused a miscarriage of justice ; the old Indian thinking it a usurpation of his powers to be dictated to by what he designated the "Man at home." This engendered a bad feeling, especially when certain appointments were given to members of the British department ; and, unhappily, it did not end here, for the odium permeated the ramifications of our established system ; the result being that during the days of the late Mr. Wilkinson, orders from England were, in some cases, entirely ignored. To this day the stigma is felt, but time is rapidly effacing what bad effects this piece of legislation produced. The members of the Indian department are becoming numerically smaller, so that ere long the whole country will be under our present organization. When such time arrives, our chief in England will then have under his own guidance, men after his own heart, so that the working of our ponderous machine will be carried on smoothly.

The service in India is not unpopular as a service ; this I am convinced of. It lies (1) in the want of recognition by the authorities of services rendered. (2) The pay is inadequate, and, as compared with the English scale, smacks of the ridiculous. (3) Five years is quite long enough to

serve, unless a man seeks for an extension. (4) There should be a limit to one's charge, and not expect a veterinary officer to perform double or even treble duties without remuneration. These four points embrace all that is necessary; the three latter could by proper representation be secured. As to the former, the less said about it the better. It takes time to overcome prejudice, and as the wheel of one's existence continues to revolve, we can only hope that the film which so completely obscures the vision of the military authorities in India may be removed, and that we shall receive the rewards we really deserve.

All acquainted with Dr. Evans will, I am sure, stretch out the arm of sympathy. His ability and zeal, combined with indomitable perseverance, would in any other branch of the service have placed him in an enviable position. It may be said of him that "To know him is to respect him."

Believe me, yours faithfully,

"PFERD."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Ward, London; "Ubique"; J. Ferris, Army Veterinary Department, Athlone; "Lex"; R. Rutherford, Edinburgh J. C. James, Thornbury, Gloucestershire; W. F. Garside, Brown Institution, London; J. B. Martin, Rochester; T. W. Mayer, Aldershot; A. E. Macgillivray, Banff; "Pferd"; G. Elphick, Newcastle-on-Tyne; R. R. Cole, Hinckley; "Half-a-century in Practice."

BOOKS AND PAMPHLETS: *A. W. H. Wirtz*, Achtste Jaarverslag van het Parc Vaccinogène Bijs's Rijks Veeartsenijschool te Utrecht; *M. F. Röll*, Die Thierseuchen; *W. Tappe*, Die Aetiologie und Histologie der Schafpocke; *H. Putz*, Ueber Ursache und Tilgungder Lungenseuche; *G. Chenier*, La Lymphangite Farcineuse; *M. Hugues*, Epizoöties d'Affections Typhoides, Etat Cartilagineux de l'Oreillette Droite; Die Verbreitung der Ansteckenden Thierkrankheiten in Preussen; *H. A. Martin, M.D.*, Jefferson as a Vaccinator.

JOURNALS, ETC.: *Œsterreichische Viertetjahresschrift für Wissenschaftliche Veterinärkunde; Annales de Méd. Vétérinaire; L'Echo des Sociétés et Associations Vétérinaires de France; American Live Stock Journal; Journal de Méd. Vétérinaire et de Zootechnie; Recueil de Méd. Vétérinaire; Der Thierarzt; La Presse Vétérinaire; Revue Vétérinaire; Wochenschrift für Thierheilkunde und Viebzucht; Repertorium der Thierheilkunde; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Lancet; British Medical Journal; La Clinica Veterinaria; Mark Lane Express; American Veterinary Review; Live Stock Journal; Agricultural Gazette; Edinburgh Medical Journal; Medical Press and Circular; Medical Times and Gazette.*

NEWSPAPERS: *Berwick Advertiser; Scotsman; York Herald, Daily Telegraph; Ashford Chronicle; Birmingham Advertiser.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

DECEMBER, 1881.

SUCCESSFUL REMOVAL OF AN OSSEOUS POLYPUS FROM THE NASAL CAVITY OF A HORSE.

BY GEORGE FLEMING, F.R.C.V.S., ARMY VETERINARY INSPECTOR, WAR OFFICE.

THE occurrence of Osseous Polypi must be exceedingly rare, as I can discover no mention of them in the literature of veterinary surgery, neither can I find them alluded to in that of human surgery, notwithstanding the diligent search I have made in a pretty extensive library. As is well known, the designation is applied to tumours which occur in or on mucous membranes more particularly, and is bestowed on them from their resemblance to certain zoophytes which attach themselves to rocks and other objects by a narrow foot-stalk or pedicle. True polypi may form on any mucous membrane, but they are perhaps most frequently met with, in animals, in the uterus, pharynx, and nasal fossæ (*Rhino-polypi*), and less often in the stomach, intestines, vagina, bladder, trachea,* and bronchial tubes. According to their structure, they are usually described as *mucous*, *soft* or *vesicular*, when their substance is soft and spongy, and gorged, as it were, with fluid ; *hard*, when they are dense, as the fibrous or fleshy polypi ; and *schirrous* or *cancerous polypi*. But, as I have just said, I cannot find any reference to bony polypi, and therefore I consider the following description of more than

* So long ago as 1857, I recorded in the *Veterinarian* a case of Tracheal Polypus occurring in a troop horse.

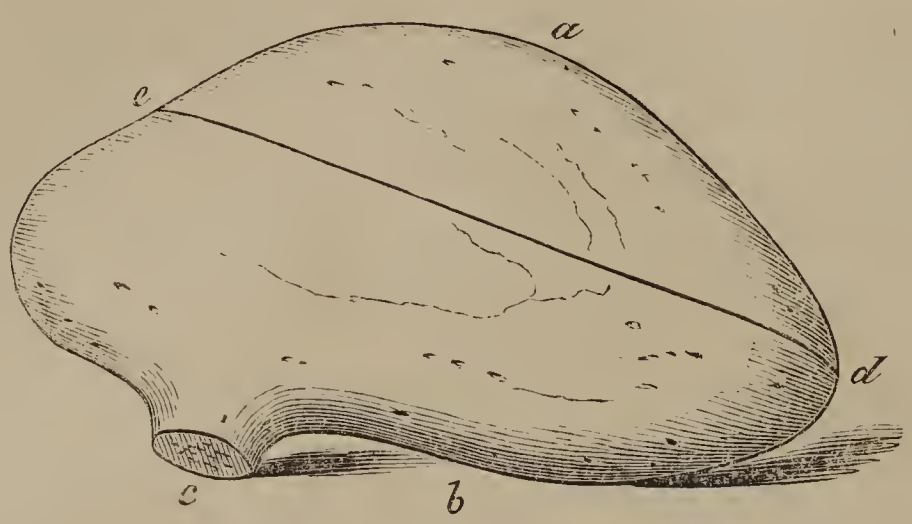
ordinary interest, not only from a pathological, but also from a surgical point of view.

Some time ago, my friend, Mr. Ison, M.R.C.V.S., of Atherstone, wrote to me concerning a polypus in the nasal cavity of a three-years-old draught colt, which he had tried to remove in the ordinary way, but had failed, owing to its being so unusually dense; and requested my opinion as to further surgical procedure. Surmising that the polypus must be of a very unusual character when it could not be removed by so experienced a practitioner, I recommended another attempt, and with the ecraseur, and if he thought I could assist him in operating, that I would gladly do so. In a few days he wrote again, and expressed a wish that I would help him. On arriving at the farm, some twelve miles' drive by a rugged road from Nuneaton, the colt, a roan or grey entire, and a rather vicious animal, was cast in a grass field (on a wet and stormy day), near side upwards, as the tumour was in the near nostril. On opening this nostril, the lower part of the growth was immediately seen. It was red, rather inflamed-looking, and occupied so much of the nasal fossa that the finger could only be passed a very short distance between it and the nasal bone, the floor and outer part of the cavity being completely filled, while the septum nasi was slightly pushed into the right fossa. On passing up the finger over its surface it was found to be abraded, and small spiculæ of bone could be felt. This marked the place where Mr. Ison's forceps had seized it. The mass was quite immovable, and from its shape filled up the cavity so closely, that it was quite impossible to detect its place or mode of attachment.

I must confess that I felt much taken aback at this formidable, and, to me, entirely novel condition, and it was evident at once that there was no need to be surprised at Mr. Ison's trouble about it. At first it almost looked like a hopeless case, especially considering the local circumstances and state of the weather; but I thought it a pity, after travelling so far, not to do something. Suspecting that we should have to remove a tumour unusually dense, I had taken with me from London, not only a chain ecraseur, but also one of Mr. Arnold's single steel-wire ecraseurs which I had obtained for a previous oper-

ation, but had not employed. From the position and volume of the growth it was useless to try the chain, as it could not be passed through the extremely narrow space existing between the nasal bone and the polypus, and it was therefore decided to try the steel wire. The horse's head was raised by means of a sack stuffed with straw, the vertex of the head being kept highest, nose lowest, in order to prevent the effused blood passing into the larynx. With extreme difficulty the loop end of the wire was passed up as high as its length would allow, when each side was pressed down to the floor of the fossa, to make it grip somewhere above, while Mr. Ison turned the handle. But twice the wire slipped off, there was considerable hæmorrhage, and the case appeared to be desperate. A third trial was resolved upon, and the wire was again introduced; but it was working where neither the eye nor the hand could guide the loop, and the rigidity and elasticity of the wire made the manipulation all the more troublesome. This time the loop, after some turns of the handle, was found to have fixed itself somewhere in the upper part of the tumour, and Mr. Ison continued turning the screw, while I kept the sides of the wire firmly held down in the floor of the cavity. Mr. Ison had a tough task, as the resistance to be overcome was very great, and I trembled for the safety of the wire. Fortunately it remained intact, and in a few minutes a large bony mass—a section of the upper part of the tumour—was removed. The finger of one hand could now be passed up the nostril, and it was discovered that the growth was really an osseous polypus, the pedicle being high up, and attached to the superior maxilla. With some considerable amount of force, this pedicle was broken by means of the fingers, but the portion was only partially detached, being still held by the mucous membrane, which was greatly thickened all over the growth, and passed so far beyond reach that the tips of the fingers could only now touch it. We had nothing but dissecting forceps, and they were far too short; so after a time a visit had to be paid to the farm kitchen, where a long, thin poker, slightly hooked at the end, was procured, and by means of this the entire mass was quickly taken away. There was no hæmorrhage, and the nasal cavity was quite patent; nothing abnormal could be felt,

and the serious obstruction to the respiration, which had existed before the horse was thrown down, was no longer present. I am informed that the colt was at work next day, perfectly well, and has remained in good health. The growth (of which a drawing is here given) weighs $4\frac{1}{4}$ ounces; it is $4\frac{1}{2}$ inches long, $3\frac{3}{4}$ inches broad,



and $1\frac{3}{4}$ inches thick in the centre; while the pedicle (c) is only one inch in diameter. In shape it is a long flattened mass, convex on its free or superior border (a), straight on its inferior or attached border (b), narrow towards the inferior extremity (d), and rather angular at its upper end (e), which caused the wire to slip off. Indeed the loop of the wire had only fixed itself in the middle of the upper border (e), not at the base, and this made the task of cutting through the polypus all the more arduous, as the section was made nearly through its longest diameter and thickest part. In texture, the pedicle is dense osseous tissue, the body of the polypus not being quite so hard, but somewhat like rather close cancellated tissue. The mucous membrane investing it is thick and inclined to be dense. Nothing was known as to the history of this growth; it had only been observed two or three months before, when the breathing became obstructed, and it was believed that it had increased in size rather rapidly.

I cannot speak too highly of my first trial of the single steel-wire ecraseur. Without it operation in this case could not have been ventured upon, and the manner in which it cut through tissue that nothing but a chisel could have touched, but which

it would have been the height of folly to have tried, was something marvellous. It can certainly be commended not only as by far the best polyptome in existence, but also for the removal of all dense tumours, supernumerary digits, limbs, etc., where the chain ecraseur would be either too thick, not sufficiently strong, or, from its too great flexibility, not capable of being passed into a narrow canal. The only fault I had to find with the steel wire in this instance was its rigidity and elasticity, which rendered it exceedingly difficult to adapt to the particular outline of the polypus, especially as the finger or fingers could not accompany it upwards.

It might be said that this growth was only a homologous osteomatous tumour; but from its shape and location, it undoubtedly as well deserves the name of polypus as if it were composed of fibrous tissue.

THE TRANSMISSIBILITY OF DIPHTHERIA FROM CALVES TO PIGS.

BY R. R. COLE, M.R.C.V.S., HINCKLEY.

[Having met Mr. Cole recently, while visiting in his neighbourhood, he casually alluded to the subject of Diphtheria in animals, and related an instance of its transmissibility from calves to pigs. Seeing the importance of the subject, we requested him to furnish us with the leading features of the occurrence. This request he has kindly complied with in the following communication.]

THE outbreak of Diphtheria took place on a farm about a mile from Hinckley, in the occupation of my late partner, Mr. J. M. Goude, M.R.C.V.S.

The first case noticed was that of a calf about five months old, which had been seen the day before apparently well, but was found the next morning in a dying state. A slight swelling was noticed around its throat. No *post-mortem* examination was made, but on cutting into the swelling it was found to be light-coloured, and not dark as in "Black-leg."

Orders were given for it to be buried, but the man who was doing so left it for a few minutes, and on his return found one of the sows in the yard eating part of the intestines.

Mr. Goude, however, did not know of this fact until some time after this, and when the other pigs were taken ill.

The next morning this same sow was noticed to be amiss, and her throat very much swollen. The day after two of her young pigs, about seven or eight weeks old, were found with their throats swollen. They died in about twenty-four hours after being taken ill. Calling on Mr. Goude at this time, he told me about the cases, mentioning that he had opened one of the pigs that died, and finding a large amount of exudation round the throat, and the fauces highly inflamed, but that the contents of the chest and abdomen were healthy.

At this same time another sow was ill with swollen throat, and the day after two of her pigs, about eight or nine weeks old, were seized, and died in a similar manner to the two first.

These Mr. Goude sent in for me to examine, which I did in company with Dr. R. Bradshaw Smith of this town.

The swelling round the throat and neck, as in the previous cases, was very great, the œdema arising from effusion of a pale straw-coloured fluid into the areolar tissue.

The cervical and submaxillary glands were all enlarged and inflamed. On the edge of each corner of the soft palate and tonsil was a tough, dark-coloured membrane, about the size of a shilling, and in appearance something like a dirty piece of chamois leather. This, when taken hold of at one edge by a pair of forceps, readily peeled off entire, leaving a red, inflamed surface underneath. There was no inflammatory appearance of either pharynx or windpipe. The contents of the thorax and abdomen were healthy.

Doctor Smith's opinion of the case was that it was a most marked one of Diphtheria.

The last animal attacked was the boar, aged twelve months. He was taken ill a week after the calf, and, as in the previous case of the two sows, his throat was enormously swollen for two or three days, during which time he took no food. The swelling then gradually disappeared, and he is now, in common with the two sows which were attacked, and the other young pigs which did not take the disease, in perfect health.

The boar pig was in a separate yard and sty by himself, quite away from the other pigs.

EPILEPSY IN TROOP HORSES.

BY H. THOMSON, M.R.C.V.S., A.V.D., 19TH HUSSARS.

IT is not often that veterinary surgeons have to deal with this affection in horses, and, judging from my own experience, it is exceedingly rare in the army, for during a service of some years I have only met with one case, and that lately; perhaps, therefore, a short account of the case may not be unacceptable to those who have not yet been fortunate, or unfortunate, enough to have met with the equine form of the disorder.

It has not yet, as far as I am aware, been exactly determined upon what the epileptic state depends, even in the human subject, for in the majority of many cases of *post-mortem* examinations of epileptic persons the brain and other organs have been found perfectly healthy (apparently). In dogs the malady has been ascribed to parasitic irritation of the intestinal tract, teething, such as a result of distemper. In the horse it has been known in some instances to succeed attacks of debilitating disorders, such as Catarrhal Fever, also injuries of the head; but in the case I am about to describe I can discover no cause whatever—nothing in the history of the animal, or in the symptoms presented by her, either when quiet or when under the influence of the fits.

Before proceeding to notice the state of the patient during a fit, it will not be out of place to describe her appearance when in health, or rather when not in a fit. To a casual observer, nothing would appear much amiss with the mare; but on a more careful examination she appears depressed and unhappy, does not seem watchful like other horses, and yet, on being approached, becomes very nervous and excitable. The pulse is rather slow, about twenty-eight or thirty, and soft; temperature of the body, uniform and normal; conjunctivæ, slightly yellow; evacuations, regular and natural (altered of course by treatment); urine, rather high-coloured, but usual in quantity. In fact, there are no great differences in appearance between this and any other mare.

It appears, from her history, that nothing unusual was noticed about her appearance or behaviour, until about eighteen months ago, when she was seen at times to be affected with a twitching

of the facial muscles, which soon passed off; and when she was so affected, that she carried her head rather awkwardly and stiffly. Later on, she became dangerous in the ranks, on account of the large muscles becoming affected with tetanic spasms, during which she appeared to lose all control over her actions. She has gradually become worse, until now she suffers, at irregular intervals, from fits which present the characteristics shown in the following clinical history :—

Troop-mare A 23, fifteen years old, with eleven years' service, was on Sept. 6th reported to me as being mad, and suffering frequently from fits which made her dangerous, not only to herself, but to other horses and the men attending them. She was therefore admitted to hospital, and entered in the case-book as suffering from "Mania Periodica." I was not aware at the time of the exact nature of the case, not having seen the mare under the influence of the malady ; but the exaggerated accounts of the symptoms led me to expect a great deal more violence, and of an intentional character, than was really the case. Owing to the shortness in duration of the fits, and the irregular intervals at which they occurred, I was unable for some time to get at their true nature, as I had not contrived to see the patient until she had nearly or quite recovered ; but at last she very conveniently arranged a fit while I was looking at her, when the following symptoms were presented :—

The first indication of an approaching fit is quivering of the facial muscles ; this gradually extends to the whole of the superficial muscles, until the patient appears to be quivering and twitching all over. This state is soon succeeded by tetanic spasms of the muscles of the neck, back, and tail, those of the limbs also to a slighter extent. The appearance now is somewhat similar to that of a horse suffering from Tetanus. The ears are pricked forward, the tail slightly erected ; the eyes appear, as it were, starting out of the head, the pupils being greatly dilated ; the patient begins to walk in a stilty fashion round the loose box, trying to climb the walls, although unable to see ; and presently, placing the forehead against a wall, remains fixed, pressing so hard as to bruise the skin. There is not much actual violence, but rather unconsciousness. The pulse does not ap-

pear to be much altered, a little harder perhaps, during the fits, which, if left alone, gradually pass off in about twenty-five minutes, the *finale* being an expulsion of flatus and semi-liquid fæces. Cold water dashed upon the head gives great relief, and considerably shortens the duration of a fit. I am told that she has been known to foam at the mouth. This is positively stated by two witnesses; but I have not noticed it myself. She has never been known to fall, and never appears to lose control over the limbs.

The treatment, so far, has been very simple, and apparently tolerably efficacious, for the patient has remained free from fits since Oct. 11th. It has consisted in laxative medicines and diet, with isolation and perfect quiet, as far as possible, with exercise.

The mare being still alive, conjecture as to the probable cause or causes of this condition would be simply guess-work; but, from the very irregular intervals at which she suffers, the cause is possibly intermittent, though of what nature I have not an idea, or rather I have many ideas, none of which are probably correct.

ABSCESS IN THE BRAIN, SUPERVENING ON INFLUENZA.

BY J. B. MARTIN, M.R.C.V.S., ROCHESTER.

HAVING read in the VETERINARY JOURNAL for October a narrative of some cases of brain disease supervening on Influenza, contributed by Mr. Blakeway, I am induced to forward you a brain of a four-years'-old cart-horse that died with precisely the same symptoms showing themselves as he describes. Last June five horses were suffering from Influenza. They were treated by an unqualified man in the neighbourhood, and two died; the others apparently recovered, but did not thrive. They fed well, but looked unthrifty. In the beginning of September, one, a four-years'-old cart-horse, the owner observed to be dull, and that it did not eat quite so well as usual; but he sought no professional advice until the beginning of the present month (October), when I was requested to see the animal. He was very weak and emaciated, breathing short, dull, and not taking any notice of

surrounding objects; fed a little. I had him walked out. He went stiff, and was lame on the near hind leg; this had not been noticed before. The shoe was taken off, and I examined both foot and leg, but could detect nothing to account for the lameness. The pulse was small and weak. The next day there was total loss of appetite, breathing shorter, and clammy mouth. The horse was in a state of semi-consciousness; he would press his head against the side of the stable, or anywhere accessible. In placing a pail of water in front of him, he would hold his head at the bottom of the pail, with the water up to his eyes, and not attempt to take it out to breathe. The following day he was down in the stable—which was very small—and quite comatose; and as in Mr. Blakeway's case, there was not any frenzy. Wherever his head happened to go, there it remained perfectly quiet without a struggle. During the night of this third day he died. From the first the case was clearly one of pressure on the brain.

I have not cut the brain about much, but it will be seen that the meninges are intensely inflamed, and the vessels covering the brain itself are engorged with blood. Cutting through the membranes, there was a quantity of pus at the supero-posterior portion of the cerebrum, floating about on and between the hemispheres. Underneath the cerebellum there was an abscess, and also pus in the right lateral sinus. I have merely sent this case to corroborate Mr. Blakeway's opinion that we do sometimes get cerebral abscess supervening on Influenza.

[The brain, though somewhat decomposed, showed the lesions described by Mr. Martin. Abscess in the brain, due to Encephalitis or Pyæmia, is not at all uncommon in veterinary experience. It is sometimes a sequel or concomitant of acute and chronic infectious diseases. In the brain sent, the upper part of the right hemisphere of the cerebrum was much softened, and of a deep red hue, and in the centre of this patch was a soft, cream-like mass which, when poured out, left a cavity into which the end of the thumb could be inserted. This communicated with the right lateral ventricle. There was a similar spot on the left side of the cerebellum.]

ABSCESSES IN THE BRAIN, SUPERVENING ON STRANGLES.

BY J. C. JAMES, M.R.C.V.S., THORNBURY, GLOUCESTERSHIRE.

ON reading Mr. Blakeway's interesting report of "Cases of Brain Disease Supervening on Influenza and Strangles," in the October VETERINARY JOURNAL, it recalled to my mind an interesting case which came under my notice in April, 1877. The subject was a valuable pony, four years old. When requested to see the animal, I was told that it had suffered from Strangles about a fortnight previously. A large abscess had formed under the jaw, and had discharged freely for several days; and so well did the animal appear to be going on, that the owner did not think it necessary to call in a veterinary surgeon. I carefully examined the patient, and found it very dull, pulse full and slow; it refused food, and stood with its head in a corner or against a wall, and if any one attempted to move it, it would stagger about the box, and nearly fall down. The next day it lost all power to maintain the standing position, and fell down, when it commenced to struggle and fight, and continued to do so, at intervals, for nearly twenty hours. All efforts to assist or make it stand proved futile. I may state that I diagnosed the case as one of abscess forming in the brain. The abscess under the jaw had quite healed, and the animal had been to work two or three days before secondary symptoms set in.

I made a *post-mortem* examination, and sent the brain intact to Professor Axe. I received the following reply from him:—"I have not yet completed my examination of the brain, but so far I notice three distinct abscesses; viz., one in the cerebellum, one in the anterior lobe of the left hemisphere, and a third in the posterior lobe of the right hemisphere of the cerebrum. I have opened the ventricles, but do not find the abscesses to have any communication with them, nor with each other. To-morrow I hope to find time to make a microscopic examination of the brain-matter in the vicinity of the pustules."

Fleming says, in his excellent work on "Veterinary Sanitary Science and Police," article on "Strangles": "These abscesses may appear in various parts of the body ..... sometimes

they also form more profoundly, as in the parotid and mesenteric glands, and even in the testicles and brain ; then, of course, the disease is much more serious."

PHARMACEUTICAL NOTES ON TURPENTINE.

BY R. PATERSON, M.R.C.V.S., DOWNHAM, NORFOLK.

"HOOSE," or "Husk," affecting calves, being again prevalent this season, those practitioners who are, like myself, situated in country districts where the pasture-land is low-lying and wet will no doubt be called upon to treat many of those cases.

Of the efficacy of turpentine in this affection, I believe we are, as a profession, generally agreed as to its superiority over other agents of this class. It has, however, the objection of being so easily recognized by the farmer when given in the usual way, mixed with oil, even although it is discoloured, while its well-known odour is at once a serious drawback to its use. The latter objection, I find, is most effectually hidden by spirits of cassia (made by one part Ol. Cassia, to seven parts spirits of wine). The adjunct I employ, which is not only cheaper and more cleanly, but is taken by the animal more readily than oil, is flour gruel. One pound of wheaten flour is sufficient to make about one gallon of gruel of a suitable consistency. The flour should be beaten, first, into a *smooth* paste, with cold water, and, when thoroughly free from lumps, boiling water added gradually, with constant stirring. It can, if desired, be darkened in colour by burned sugar, or, what is better, solution of aloes.

Of the high estimation that turpentine has deservedly attained as a general stimulant for cattle, it is needless for me to enlarge upon ; but what I wish especially at this time to point out, is its great value when administered internally in cases of *post-mortem* hæmorrhage. The ergot of rye, so beneficial in human practice, has, as far as I have observed its action on cattle, been quite a failure, and I have not been always successful in stopping the flow of blood even with Liq. Ferri Perchloridi, while its action is much slower and less reliable in its results than turpentine. The

cold applications to the loins and vagina are, of course, also had recourse to.

Turpentine has also been used externally as a styptic, where the bleeding has been very extensive, and with the most gratifying results; indeed, I have seen its decided action in arresting hæmorrhage after other agents had been used in vain.

A beautiful *liniment* of *turpentine* for external use, and resembling much in appearance what is known as Elliman's "Royal" Embrocation, can be made in the following manner:—

Take of soft soap, 12 ozs.; powdered chloride of ammonia, 1 oz.; boiling soft water, 5 pints; turpentine, 1½ pint. Place the two first ingredients in a vessel deep enough, so that the contents, when stirred by means of a broad spatula or flat piece of wood, can be kept in lively intermixture until cold. The water, which should be at full boiling-point, is poured on the soap and chloride of ammonia, and the turpentine added gradually (about half a pint at a time) while the mixture is hot. If the liniment is at any time a little too thin, it can be thickened by the addition of a small quantity of turpentine when cold.

It will be found useful in sore throats, Rheumatism, as an application to the abdomen in Colic, and for a variety of other purposes. It possesses further the recommendation that it does not blemish the skin of the horse.

FILARIA IMMITIS IN THE HEART OF THE DOG.

BY E. A. HOLLINGHAM, M.R.C.V.S., REDHILL, SURREY.

As cases of the kind above-mentioned are extremely rare in this country, I think a few details of the one I have had an opportunity of observing may be of some interest.

On October 13th, my advice was asked by a gentleman living in this town concerning a Gordon setter dog recently arrived from Japan, which he was taking charge of for a friend. I found the animal very dull; the pulse was of a peculiar character, sometimes long and full, and then for a few beats quick and wiry; the bowels were constipated, but there was no fever; there was frequent vomition, and I also learnt that the dog was subject

to fits. I treated the animal with the view of remedying the constipation, but on calling to see it on the morning of the 16th, I found it had died during the night. I made a *post-mortem* examination by request. By the appearance of the body, I should judge it had died in convulsions. The tissues were slightly anæmic, but not emaciated ; the liver was enlarged and deeply coloured with bile, and the gall-bladder full ; the left cavities of the heart were stuffed with filariæ, as also the pulmonary artery ; the other viscera were healthy, and I could find no sign of any other class of parasite in the body. The dog being the property of a medical gentleman in London, he requested me to forward him the specimen, which he intends ultimately to deposit in the museum of the Royal College of Surgeons.

[We hope Mr. Hollingham has preserved some of these filariæ for the museum of the Royal College of Veterinary Surgeons.]

THE CONTAGIOUS DISEASES (ANIMALS) ACT AND TUBERCULOSIS.

BY H. R. BRADSHAW, M.R.C.V.S., PORTRUSH, IRELAND.

IT appears to be pretty well understood among pathologists of the present day that Consumption is infectious,—capable of transmission by certain means from one animal to another. We know that man and other animals have become affected with the disease where the milk and flesh of consumptive subjects have been used as food.

Recent investigations go to show (*vide* Dr. Cameron's address on "Micro-organisms and Disease" in the VETERINARY JOURNAL for November) that Consumption and all other tubercular diseases are highly contagious, as well as infectious ; that they are due to a microscopic organism which can be cultivated, and that they can be reproduced in healthy animals after such cultivation.

By the discoveries recently made regarding germs as being the true source and fountain from which specific blood-poisons spring, and that these arise from a known origin, and not from spontaneity, a new era in medicine has commenced.

All infectious diseases seem now to be a product of fermentation, so to speak, by these spores, each specific disease having a specific germ ; and it would appear that Tuberculosis is no exception. Much, therefore, that was heretofore in doubt or altogether unknown regarding these maladies, will now be cleared up, and, let us hope, settled for ever.

If Consumption is contagious—infectious we know it to be—the sooner it is added to the list of diseases in the Act of '78 the better.

In my province as inspector, I came upon a case of Tuberculous Pneumonia a short time ago, the subject being a young cow. Although the case was one that might readily have been put down as Pleuro-pneumonia, yet my practical knowledge of the latter disease prevented me from falling into an error. I reasoned with myself, and thought that, although I had no right to detain the animal under the Contagious Diseases (Animals) Act, yet it would not look very creditable, nor perhaps altogether justifiable, for me to send her with a clean bill of health over the water.

Besides, it seemed absurd for me to pass an animal in such a state, while perhaps a meat inspector in Glasgow would reject the carcase, as he had a right to do, for being diseased. I may add here, *en passant*, that I was informed afterwards that this animal was bought at an auction for £1; and the owner himself informed me that she would be readily bought, and was intended, for butcher's meat in Glasgow. Here, then, if I allowed this cow to be shipped, I should be putting a premium, as it were, on the diseased meat traffic.

After having first communicated with the Department, I next called the attention of the inspector to the local authority to it, and he wrote a report stating that the animal was affected with Tuberculosis, which was infectious. This was brought before the board of guardians (the local authority), who entered on their minutes that such a report was made, but took no further action in the matter. Of course the case was not one for a prosecution, as there was no offence against the Act of 1878.

But where were the expenses for the animal's keep during this time to come from ? I believe the owner could not have been

compelled to pay; but he saved any trouble on this head by paying voluntarily.

The cow was allowed to remain here until she died, which was about three weeks from the time she was presented for shipment. I had an opportunity of making an examination of the carcase, which showed Tuberculosis of a most extensive nature in the lungs, etc. I think every inspector under the Contagious Diseases (Animals) Act should have the same facilities afforded him for dealing with this disease as if it were Pleuro-pneumonia.

THE PROPERTY AND FUNCTION OF DISEASE-GERMS.

BY RICHARD W. BURKE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, ALDERSHOT.

MANY veterinary practitioners have recently pooh-poohed the idea of the agency of disease-germs as a cause of specific disease, maintaining their presence to be a mere concomitant, and refusing to believe that they had any real share in the process of disease. But it has really been long since demonstrated, and this beyond doubt, that the particulate organic germ of each specific (communicable) disease furnishes the *primum mobile* of that change; that the presence of this germ is, in fact, a *sine quâ non* in the production of disease; a doctrine which, though confirmed by the force of actual demonstration, will have to fight its way for some time against a whole army of prejudiced authorities. The precise relation of bacteria to contagion was long a subject of speculation, and every new fact brought forward with regard to it seems to be hailed or rejected by some persons, according as it appears to favour or oppose some theory upon the subject. From what we now know of the life-history of certain bacterial forms, there is strong presumptive evidence in favour of their being the actual contagia in certain diseases. What greater proof do we require in support of this doctrine, than the success in the *communicability* of specific disease from the sick to the healthy? I will, therefore, take it as now *proved* that the contagium in every case is a germ of some sort, possessing the

power, when introduced into the body of an animal, of setting up its own disease process. Those opposed to so elementary a truth are a class of whom it may be broadly inferred that they are deficient in that power which enables a man to see how ignorant he needs must be. Not long ago the *Bacterium termo*, the particular ferment of putrefaction, was thought to be not the destructive agent which occasioned putrefactive change, but said to merely revel amidst the chaos of its results, like fowl in the wake of a vessel; until the beautiful experiments of Chiene and Ewart enlightened the new medical world that this was an utter delusion, not fact. Chiene was the first who showed that *dead* tissue was not necessarily *putrid*, as he has proved by demonstration that there is no presence of bacteria in it, nor of their spores; because inoculation of it, in large quantity, into the system of an animal is followed by negative results, but when it is exposed to the action of the air it acquires active properties.

The notion that bacteria are harmless organisms, and that they exist in countless numbers in all the organs of the body, is erroneous. Their presence has only been demonstrated on *epithelial* surfaces, whilst on *endothelial* surfaces they have, on the contrary, been shown not to exist—during life at least.* And they are "harmless" only whilst the vitality of their *host* is resistant. Reference to my article on Septicæmia, contained in the VETERINARY JOURNAL, will show that I have treated of this matter as far back as May last, but doubtless it has escaped the attention of some readers.

TONICS.

BY J. DOWLING ALLMAN, PHARMACIST.

UNDER this head are classed medicines which, when administered internally, are supposed to act upon the nutrition of the

* Professor Lister, in an experiment he performed, has shown that if blood be run from the vein of an animal through a calcined glass tube into a glass flask that has been heated to 300° F., and allowed to cool in a chamber whose air has been purified by the fine spray of carbolic acid, the flask may be kept simply covered with an inverted watch-glass and under a bell-jar without putrefaction. Yet, under these conditions, *if the blood be inoculated with bacteria*, it putrefies rapidly. Lister also showed that the same holds true of milk, with regard to the *Bacterium lactis:* it is not present in the milk when secreted, but appears in it only after external contamination.

various tissues, so as to restore lost tone; not exactly by calling into play the vital principle of contractility, but by increasing the power in the part. Such substances are known and acknowledged as Tonics. Now one of the great difficulties in veterinary practice is to find a tonic that is efficient and commendable in its action, but not too costly. Most observant veterinarians have noticed the frequent failure of sulphate of iron as a tonic; in fact, it is well known to therapeutists and pharmacologists that this salt frequently does more harm than good, owing to its only being partly dissolved, and taken up in the blood; that portion remaining acting as an irritant on the mucous membrane of the stomach and intestines. In order to make good this deficiency in veterinary pharmacy and therapeutics, I prepared a compound, the active ingredients being the amorphous quinine and the solution of dialysed iron, which, for brevity and convenience, I have termed "Mist. Tonica banc." I introduced it to the notice of the veterinary profession, and although it has only been before them for something like eighteen months, it has already become a popular remedy with those practitioners who have given it a trial, not only as a general tonic, but also as an antipyretic. It has several most decided advantages over any of the tonics hitherto used in veterinary practice, as it is not costly, and owing to its entire solubility, it is easily and rapidly absorbed in the blood; so that in diseases of malnutrition it can be administered with marked and very appreciable results. As an antipyretic it is certainly one of the best of remedies, and can be used whenever there is serious elevation of temperature. In Septicæmia and Pyæmia, accompanied with high fever, it is especially manifested during those stages of disease in which the natural tendency is towards a lowering of temperature, and in preventing a rapid return of the excessive fever. For this latter purpose my friend, Mr. E. Faulkner, M.R.C.V.S., of Manchester, has given it a fair trial, and from his careful observations he was perfectly satisfied that it lowered temperature, pulse, and respiration. In the extreme debility occurring at times during convalescence from acute disease, where the patient exhibits signs of prostration and shows no inclination for food, the compound can be brought into play with inestimable value, not

only in repairing broken-down tissue, but improving the general condition, and producing permanent and decided results on the patient. I have most abundant testimony from many eminent veterinarians as to its unmistakable value in the extreme debility occurring after an attack of severe Influenza, and other high fevers. From various clinical notes it is proved that it does not produce constipation of the bowels, although it has been exhibited in severe prostration for a given time. This is explained by the fact that the constituent known as dialysed iron is deprived of its astringency by a chemical process of separation ; hence the term (dialysis). It is a perfectly neutral and miscible preparation, the dose being one to two fluid ounces diluted to ten ounces of water, and administered twice daily, or *si opus sit.* I commend it very strongly not only as a food to the system, but also as an important curative agent, and hope to see it rank and take as prominent a position with the profession as many of the other substances that I have introduced for the practice and art of veterinary science. The compound can be had from Messrs. C. J. Hewlett and Son, Wholesale Pharmacists, Charlotte Street, Great Eastern Street, and is known as "Mist. Tonica banc."

GANGRENOUS STOMATITIS — TUBERCULAR STOMATITIS — DIPHTHERITIS? A DISEASE AFFECTING THE TONGUE AND MOUTH OF THE OX.

BY A. METHERELL, M.R.C.V.S., BRIGHTON.

WE ought all to be very much obliged to Mr. James for his article in the Journal for November, also to Captain Russell, Mr. Macgillivray, and other gentlemen who, from time to time, record their experience with the above disease, of which it is hardly too much to say, that it is the bane of many country veterinary surgeons' practice. We must remember that of all organs, it is the tongue which is insidiously invaded, nearly the whole of which may be involved and permeated by this destruc-

tive agency. Mr. James says he *used* to cut and scrape the tongue, and that he now finds Tinct. Ferri. Perchlor., with an equal part of water efficacious, if used daily at first. Does Mr. James still cut or scrape the tongue, or will this application cure without? If so, it is indeed in every way a valuable discovery. To those who have not seen this disease, I will remark that at first the subject of it will lose flesh, and will soon show a difficulty in gathering food, even from the manger or crib, and in masticating it; also an inability to graze. Then will be noticed a flow of saliva, occasional smacking of the lips, and an accumulation of frothy saliva about the mouth, with serous effusion in the inter or submaxillary space. The veterinary surgeon naturally examines the mouth, and sees an appearance generally about the dorsum of the tongue, like a piece of pancreas embedded there. The animal is then cast, and whilst the mouth is kept wide open by means of the balling iron, the operator, using the ordinary fleam, makes deep incisions into the parts affected, and dresses them. The animal during this time will obligingly cough into the face of the operator a comforting compound of medicated sanguineous saliva, which, if he is an enthusiastic pathologist, he will be at liberty to enjoy. The mop of tow, as described by Mr. James, will be found useful, and we have had good results from Sol. Ag. Nit., one stick to six ounces of water. Having in view the intense, protracted and systematic torture, involved in the periodical cutting and dressing; the fact that in any case the animal becomes a skeleton; and again, that he will probably never graze well, it is both humane and politic to advise slaughter in many cases, when the owner is willing, because the result of treatment seldom satisfies him.

We have found these cases associated with what in some parts are called "wens," and which, whether taking the form of abscesses or not, are best treated with Acid. Sulph. applied with friction to their bases, by means of a suitably-shaped piece of brick or stone, or a piece of hard wood. We have a case now in a bull, of a cluster of four wens in a line along the lower edge of the jaw.

FRACTURE OF THE OSSA SUFFRAGINIS AND CORONÆ, WITH RUPTURE OF LARGE METACARPAL, DIGITAL, AND PLANTAR ARTERIES, AND LACERATION OF THE TENDONS OF EXTENSOR PEDIS, FLEXOR PERFORATUS, AND INFERIOR SESAMOIDEAN LIGAMENT.

BY A. F. APPLETON, M.R.C.V.S., LONDON.

ON Saturday, the 22nd of October, I went with Mr. Anderson, A.V.D., to Kensington Barracks, to see a horse of the 11th Hussars stationed there, that had met with an accident.

It appears that the animal ran away with an orderly, and in trying to evade coming into collision with a conveyance coming towards him, slipped up on the wooden pavement, and sliding along, his near fore leg came in contact with the tyre of the wheel of a cab standing on the street. This happened close to the barracks, where he was taken with some difficulty. On our arrival we found the animal in a loose box, standing on three legs, and evidently suffering from a complicated fracture of the os suffraginis of the near fore limb. There was considerable swelling from the knee downwards, and as the animal was in great pain, orders were at once issued to have him destroyed and the leg cut off at the knee.

Post-mortem Examination.—Upon removing the skin, we found large clots of extravasated blood down the whole course of the leg, which accounted for the swelling, and upon closer examination it was discovered to have come, in the upper part, from the large metacarpal artery, and in the lower from the digital and plantar arteries, all of which were ruptured. The inferior sesamoidean ligament and tendon of extensor pedis were also lacerated, as was one of the branches of the perforatus tendon.

We now came upon the os suffraginis, which was broken into about thirty pieces, more or less displaced, and the os coronæ, which had a piece broken off the inside of the proximal end.

Editorial.

EXCERPTS FROM CONTINENTAL VETERINARY JOURNALS.

BY J. H. STEEL, M.R.C.V.S., A.V.D.

WE are glad to note that recently the Army Veterinary Department of Belgium has met with some recognition from the Minister of War, Major-General Gratry. The scheme of reorganization which he has introduced has to an extent met and removed some of the grievances of our Belgian *confrères*. The highest grade was that of inspector, ranking as major, and the remainder of the service consisted of veterinary surgeons divided into three classes. In future the inspecting veterinary surgeon in chief will rank as lieutenant-colonel, and there will be two principal veterinary surgeons ranking with majors. These changes have been made without any augmentation in strength of the department. Also it is interesting to note that the veterinary and pharmaceutical ranks seem to be about on an equality in the Belgian service. But as *L'Echo Vétérinaire Belgique* shows the rather curious fact, that while in most corps the lieut.-colonel receives 7,100 francs and the majors 6,300 francs, the veterinary officers of the same ranks receive respectively only 6,500 francs and 5,100 francs. This the excellent Belgian journal justly stigmatizes as "a desire on the part of the Minister of War to place veterinarians in an inferiority as unwarranted as prejudicial, not only as regards their emoluments, but also in status and professional dignity." And it pertinently asks, "What justification is there for this whilst all Ministers of War are unanimous in recognizing how great may be the services rendered by a competent and zealous Army Veterinary Department?" and again argues, "The unjust exception is not only seen in comparison with the combatant branches, but especially with the Medical Department; and though we may look with hope on the change as a step towards that equality which ought to be between human and veterinary practitioners, we cannot help noting how between the two classes of surgeons there are still regrettable differences humiliating to veterinarians. In studies, intelligence, and attainments they are similar: the difference lies solely in the application of their knowledge; and although the aims of human medicine are higher, the veterinary practitioner, dealing with lower animals, requires equally severe studies, equal zeal, and equal self-sacrifice, and he renders not less great and useful services." It also points out another and greater defect in this new warrant, rendered the more serious as being but a repetition of the last (dated 1876, whereby the pay of 1st class veterinary surgeons was increased by 400 francs): the junior veterinary surgeons, those of 2nd and 3rd classes, are forgotten! They are affected negatively by this new warrant, which enables the seniors to remain on the active list longer, and gives them inducements to do so, and thus promotion will be very seriously retarded. Thus the senior officer, as before, will retire at the age of sixty, but the two coming next on the list, instead of retiring on attaining fifty-eight years of age, will, since they rank as majors, be allowed to remain on full pay until sixty years. The spirit of the system now is to improve the position of junior officers, a matter which, as it concerns regiments and other departments, has already attracted the War Minister's attention, and so let us hope the Veterinary Department will not lose its share of advancement in this respect.

The above-described changes in the position of officers of the compact and excellent Belgian Army Veterinary Department, will prove interesting to some of us here, as may the following details drawn from a report on Typhoid diseases among the horses of the 2nd Regiment of Guides, stationed at Tournay in the years 1879-80 and 1880-81, assuming an

epizootic character. The excellence of the report does credit to the author, M. Hugues, and to the service to which this well-known veterinary author belongs. The outbreaks are not in themselves of a very special character, being of the nature of that disease known here as Influenza. They commenced towards the end of November, 1879, assuming the sthenic form, and affecting especially the pulmonary organs. On the last day of the month twenty-four horses were affected, of which six died. At the end of December, and on 2nd January especially, the disease assumed the asthenic or adynamic form. Eight days later the disease decreased in severity and the number of fresh cases. On the 9th and 10th January two squadrons marched to Mons and back, and they had no horses affected during that time (but no fresh cases occurred meanwhile in the other three squadrons at Tournay), and about the 20th the disease assumed the characters of a Typhoid epizooty. Altogether it lasted three months, and affected 130 horses (troopers and officers' chargers), of which twenty-three succumbed. In 1880 the disease commenced 18th November, gradually increased in extent, and declined towards the middle of March ; but whereas the previous outbreak attacked indifferently horses of all ages and squadrons, this affected only those purchased since that time. In 1879-80, strange to say, none of the baggage-waggon horses were attacked, though for ten days from 30th November, when the snow fell to such a degree as to render roads impassable, and the thermometer indicated 16° and 18°, these animals alone of the regimental horses continued to work. In 1880-81 four of these twenty-four horses suffered from the disease. Convalescence in many cases was very slow, and death sometimes took place after an illness of five or six months. From 15th August, 1880, to 15th January following, the men in the same barracks suffered from a Typhoid epidemic. The record of symptoms and *post-mortem* appearances is very full; but in discussing the nature of this disease, the author thus accounts for the absence of microscopical and chemical examinations. He continues, "But we are of opinion that analyses of this nature can and ought to be made only by persons of ascertained competence. It is because at the present time everybody pretends to *see* with the microscope, that there are so many diverse opinions on the same subject." Inoculations were attempted, but with little success. Rabbits died when some of the blood which had been taken from the carcase of one of the horses the morning after its death was introduced into their system : the blood had probably undergone *post-mortem* changes. A horse with an incurable fracture was similarly inoculated, but without any appreciable effect. The most marked features of the disease were a tendency to the separation in the tissues, especially the lungs and pleura, of fibrin and albumen from the remaining constituents of the blood, leaving that fluid noncoagulable ; also a tendency to ulceration of tissue. It would seem as if one attack exempted from future illness of the same nature. The two winters were severe, the first especially; the horses were in fifty-one stables arranged in twelve blocks, with various aspect and dimensions of these stables ; also while some sheltered only ten horses, others held twenty, and two even sixty or seventy ; no ceiling, tile roof, with the lowest tiles forming openings for ventilation. Altogether even the greatest vigilance could not secure the inmates from exposure to draughts. Several officers' horses stabled in the town under good hygienic conditions were affected. M. Hugues does *not* consider it contagious or infectious. Prophylaxis comprised simply the most exact attention to hygiene, especially long marches out of the town, during which time the stables were thoroughly thrown open. "Emigration seems to us an excellent measure. It would be easy to carry out without great changes. It would suffice to construct movable wooden stables, which could be utilized at Beverloo camp during the manœuvres, and would replace the straw shelters at present used. Then

as soon as an epizootic showed itself in any garrison it would be necessary only to utilize these materials, and in a day or two these stables, in a suitable position as regards hygiene and security of the public, could be ready for occupation. Bleeding used in the sthenic stage either cured or assisted to cure the patient ; it also did not seem to retard convalescence." The observations made on other agents used are good :—

Tartar emetic has a well-marked counter-stimulant action, which renders it almost a specific in Pneumonia.

Ipecacuanha causes a sort of parenchymatous anæmia by causing vascular contraction in the interstices of the tissues. Its action on animals, as determined by Dr. Pecholier, is sedative on the circulation and respiration ; it especially causes pulmonary anæmia by determining the blood to the gastro-intestinal tube ; but clinical observations on the horse do not allow us to expect much good from its use.

In the asthenic stage creosote, carbolic acid and phosphoric oil were found to be beneficial.

Vesicatories seemed useful, not only as acting locally, but also through their arousing action on the system in general. Mustard and setons together also gave good results.

The *mémoire* terminates with a detailed record of sixteen of the most severe cases, and altogether is well worthy of perusal as an example of how such outbreaks should be observed and recorded by a veterinarian who desires to combine "science with practice."

CASTRATION OF A CRYPTORCHID HORSE.*

ONE of the most frequent operations in veterinary practice is undoubtedly that of castration. Under ordinary circumstances, it is considered by most persons as easy and free from danger. Not so, however, with regard to the emasculation of cryptorchid horses. Regarded by many veterinary surgeons as impracticable, it is scarcely a matter for surprise that descriptions of the operation should be so meagre in the text-books on veterinary surgery.

Opportunity having, however, recently presented itself to me of performing the operation, I take the liberty of submitting to you the particulars, in the hope of their proving of interest ; especially as they reveal the fact that a wound penetrating the abdomen and wounding the peritoneum is, in the horse, not necessarily fatal—an observation made by Wolstein as far back as 1797. (*Der Thierarzt im Kriege*).

Amongst the four-year-old castrated remounts supplied, in 1853, to the Uhlan Guard regiment, was one Uteschitelno. From a cursory examination no one would suspect the deception of which the horse was guilty. He was active and lively, like the others, and was consequently accepted.

On becoming attached to the regiment, however, its unruly and almost savage disposition and conduct when approached by other animals, especially mares, soon gave rise to the idea that Uteschitelno still possessed one testicle, on which he was brought to me for examination. On the left side of the scrotum was a cicatrix of tolerable large size, but nothing on the other side remained as evidence of prior-castration. On passing the hand into the rectum, the remaining testicle could be distinctly felt.

As the commander, whom I made acquainted with the facts, refused, on the ground of its danger, to permit the operation for its removal to be carried

* An essay read before the Veterinary Medical Association at St. Petersburg, December 5th, 1856, and translated from "Adams' Wochenschrift" by W. F. Garside, M.R.C.V.S.

out, the horse was sent back and again put to duty. The regiment soon afterwards received marching orders, and so unruly did the brute become during the march, that it was found necessary to lead it along in front of the squadron. Notwithstanding the utmost caution, the soldier who attended the animal was, on several occasions, severely wounded, and on one occasion all but killed. To avoid further mischief, it was therefore determined that, on arrival at Peterhof, Uteschitelno should, at all hazards, be operated upon.

After being prepared by an appropriate diet and the intestines cleared, the horse was, on November 8th, 1856, thrown down. At an equal distance from the last rib, the transverse processes of the lumbar vertebræ and the anterior spinous process of the ilium on the right side, after the hair had been clipped off, a perpendicular incision, about five inches in length, was made through the common integument, panniculus, external and internal oblique, and transverse abdominal muscles. The peritoneum and the abdominal fat was pierced by the finger ; with the left hand the missing testicle was seized and drawn up to the mouth of the wound. Having separated the epididymis from the spermatic cord and divided the spermatic nerve and duct, the remaining artery and vein, after being twisted once round, were scraped by means of a rough-edged knife until the testicle was released, the cord being then replaced. During the whole of this time, with a view to hinder escape of the intestines and the entrance of air, an assistant held both hands pressed over the wound, which was now sutured and the horse allowed to rise. A febrifuge of calomel and Epsom salts was administered, and nothing but good and fine hay, chilled water and meal, allowed. His head was of course kept tied up. About noon fever set in, but in the evening abated, and gradually subsided. The wound went on well, suppurating nicely, upon which bran and oats in small quantities were added to the above rations. The excessive granulations which grew were easily controlled. On the 10th the stitches were removed, and daily exercise allowed. On November 30th, the horse was discharged from the hospital perfectly well, and subsequently became a very useful member of the regiment.

The success of this operation suggests the idea that strangulated scrotal hernia might possibly be treated in a similar manner, particularly as castration would thereby be avoided.

GROUNDS FOR BELIEVING THAT THE TUBERCULAR DISEASE OF ANIMALS WHICH SUPPLY MILK AND MEAT FOR HUMAN USE, IS COMMUNICATED BY SUCH FOOD TO MAN.*

BY C. CREIGHTON, M.D., CAMBRIDGE.

THE grounds on which the contention of this paper rests, may be summarized as follows :—The tubercular disease of the bovine species has certain well-marked characters which distinguish it. It is for the most part or primarily a disease of the serous membranes. The tubercles on the serous membranes are of large size, round or flat, often in conglomerate masses, joined together by cords, suspended by cords, tending to become hard and firm like shot, apt to occur on the hard margins of organs, *e.g.*, on the margins of the lower lobe of the lung. In their microscopic structure, a certain degree of vascularity, and a large number of giant-cells, are the distinguishing features. The lymphatic glands are almost always invaded by a similar new formation. The lungs very commonly are occupied with

* Abstract of a paper read at the International Medical Congress in August.

nodules of various sizes, which tend to soften in the centre, forming smooth walled vomicæ. The tuberculosis may extend to other organs and parts.

A similar condition of the serous membranes has been observed in a number of tubercular cases in man. The new formations on the serous membranes are more usually soft and membranous, representing the earlier stage of the Pearl-disease ; but several cases have been observed in which the nodules have exactly the form and structure of the ordinary bovine Pearl-nodules. An examination of the various diseased organs in these cases, show that the disease is co-ordinate in them all ; that there is no primary focus of disease within the body, and that the virus must be referred to some extraneous source on the analogy of syphilis.

In the spread of infective disorders, there is a principle of mimicry ; the marked products in the infected body tend to assume the form and structure that characterize the parent disease. It is on the morphological resemblance of the tubercular formations in the human body to the characteristic bovine tubercles, that the argument turns.

REMOVAL OF VESICAL CALCULI IN HORSES BY LITHOTRITY.

In the *Archives Veterinaires* for June 25th, Professor Bassi, of the Turin Veterinary School, relates the history of a case in which he removed an enormous vesical calculus by lithotrity, the volume of the stone being so great that he had no choice between that form of operation and recto-vesical section. Cognizant of the excellent results derived from lithotrity by Professors Bouley and Vachetta, in cases occurring in the horse and mare, Bassi decided in favour of that mode of removal. The animal was a saddle gelding, three-and-a-half years old. Its owner had noticed that since he purchased it, three months previously, the urine was blood-tinted. When not moved about there was no blood, but micturition was a little more frequent than with other horses, and even when exercised in hand at a walking pace for half-an-hour the urine was normal ; but after being ridden at a trot for ten minutes that fluid was red and stained the ground like blood. On exploring the bladder *per rectum*, Bassi discovered a very hard ovoid body, a little larger than a turkey's egg, occupying the bladder. The animal was prepared for operation by receiving a moderate diet for three days, and on the morning of May 9th was submitted to operation while fasting. The hind legs having been secured, and a twitch applied to the nose, the penis was withdrawn from the prepuce and tepid water injected into the urethra until a convenient amount of distension was produced, when the end of the penis was firmly tied by a piece of tape to prevent the escape of the fluid. An incision was then made in the perineal *raphe*, at the ischial arch by the direct thrust of a straight bistoury into the distended urethral canal, the cutting edge of the bistoury being upward, the incision being increased towards the anus in withdrawing the knife ; the forcible expulsion of the water showed that the canal had been opened. The penis was now untied, and the animal thrown down and secured in the dorsal position, the limbs being sustained in the air by means of a strong bar held by four men, the hind quarters of the animal being a little elevated. An anæsthetic having been administered, the lithotrite of Dr. Guillon was selected as being probably the best to break and extract the calculus. Smeared with olive oil, and introduced through the incision into the bladder by the right hand, while the left was passed into the rectum (previously emptied) in order to fix the calculus while it was being seized, the instrument would not act, even when the male branch was subjected to blows from a hammer, and the

calculus remained whole. Indeed, the force and blows applied so bent and distorted the lithotrite, that it could not be withdrawn from the bladder until filed and cut to pieces by a chisel. This occupied much time, and was certainly not in the patient's favour. Bouley's *tenette broyeuse* was then resorted to, and the stone was rapidly reduced into small fragments ; when the long bivalve speculum being introduced into the bladder, which was then forcibly filled with a large quantity of water by means of an ordinary enema syringe, a great quantity of small fragments of the stone were washed out. The whole of the earthy matter removed weighed more than 300 grammes. The perineal wound was not closed by suture. The operation occupied one hour, and when the horse was allowed to get up, it was walked about a few minutes, during which it passed a little urine that had accumulated in the bladder ; it was then taken into the stable, well rubbed over the body, and allowed to drink barley gruel, after which it received a dose of sulphate of quinine to prevent traumatic fever ; the wound was dressed with carbolised oil, and the inner aspect of the thighs and perineum smeared with simple ointment to protect the skin from excoriation by the urine. The wound was sponged over frequently with ice water. The administration of quinine and the general treatment were continued for a number of days without any unfavourable symptoms supervening. On the fourth day, suppuration having become established in the wound, the ice water was discontinued. The urine flowed partly by the wound, and partly by the urethra, until the twenty-second day, when it entirely passed by the natural channel, the incision having become closed. A small abscess formed subsequently, but this opened spontaneously, and the animal was discharged from hospital. Three months after, Bassi saw it again, and it was then quite well.

In the *American Veterinary Review*, Professor Liautard gives an account of a similar successful case of lithotrity in a horse.

Reviews.

Bovine Tuberculosis in Man. By Charles Creighton, M.D. (London : Macmillan and Co., 1881.)

The great importance of comparative pathology, and the rapidly growing interest manifested towards it, has recently been well demonstrated ; and in his carefully-written and well-illustrated monograph, Dr. Creighton has afforded further evidence of the benefits to be derived from its study. Veterinary literature, English and Continental, has now for some years contained records of scientific work, well conceived and ably carried out, with the view of eliciting all the information that could possibly be obtained, clinically, pathologically, and experimentally, regarding the serious bovine disease known as Tuberculosis ; and the pages of this journal have contained all the latest researches and observations on the malady. Its transmissibility in the bovine species is undoubted, and its capability of infecting other species is no less a well-established fact—this infection not only occurring accidentally, but also experimentally—by inoculation, the ingestion of tuberculous matter, or the products derived from diseased animals. From all the observations recorded, and the results of the investigations of the most careful veterinarians, the inevitable conclusion is forced upon us that man himself is exposed to infection, and may as readily become its victim as the pig, goat, sheep, or

puppy. And there is some circumstantial evidence which would go to prove this; but as experimentation on our own species dare not be attempted, and is morally to be condemned, the crucial and conclusive test fails us here.

Dr. Creighton, after studying the literature pertaining to Tuberculosis in bovines, and making himself acquainted with the pathological anatomy of the disease, compares it—so far as the morbid products are concerned—to a form of Tuberculosis in mankind, instances of which have been met with by him in Adenbrooke's Hospital, Cambridge. To judge from his descriptions, and the excellent plates which accompany them, there is certainly something more than a superficial resemblance between the lesions of this human disease and those observed in the bovine disorder. More than this it would be imprudent for us to say; and we fancy Dr. Creighton goes no further. As to absolute identity, it will require additional evidence, and that of a clearer and more definite character, before such a conclusion can be arrived at. The clinical ward and *post mortem* room can supply much of this evidence, but that which is most needed is the evidence of transmission from the cow to man. This missing link should be sought for in the antecedents of the persons affected with this form of Tuberculosis, for on its discovery depends the solution of the question as to identity. If we remember aright, Tuberculosis in various phases is a somewhat common disease among cattle in the damper portions of Cambridgeshire and the fenny regions of Lincolnshire. If Dr. Creighton will place himself in communication with some of the veterinary surgeons practising in these counties, it is possible he might be much aided in his work. At any rate, in his book he has not hesitated to seek the assistance of those veterinary writers who have treated of the disease, and by doing so has given proof of his desire to avail himself of every means by which he might strengthen his position. His book marks a distinct advance in comparative pathology, and it should interest veterinary surgeons quite as much as pathologists, physicians, and sanitarians.

BIOLOGICAL ATLAS. A GUIDE TO THE PRACTICAL STUDY OF PLANTS AND ANIMALS. By D. MCALPINE, F.C.S., and A. N. MCALPINE, B. Sc. Edinburgh and London. (W. and A. K. Johnson, 1880.)

This is a most commendable introduction to the study of biology. Illustrated by twenty-four well executed plates, each containing a number of drawings, many of them coloured, and the various parts of all named on the plate, the descriptions, though brief, are remarkably terse and interesting. Commencing with the lowest or most elementary forms of life—yeast and bacteria—reference is made to plant life, then invertebrate creatures, and finally vertebrate animals, concluding with the comparative histology of the frog and man. No better book could be put into the hands of a beginner in the study of plants and animals, and it is equally suitable for those who are advanced students in biology. It should prove attractive, for this reason, to veterinary students, and even to practitioners it will serve to do more than amuse—it will instruct, for it is well up to the biological teaching of the day.

Proceedings of Veterinary Medical Societies, &c.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The forty-fourth meeting of this Association was held in the Exchange Assembly Rooms, Birmingham, on October 28, 1881 ; Harry Olver, Esq., President, in the chair. There were present :—George Fleming, Esq., F.R.C.V.S., President of the R.C.V.S.; Messrs. H. M. Stanley, Captain Russell, and John Wiggins, Esq., Vice-presidents; F. Blakeway, Esq., Treasurer ; also J. M. Parker, H. Gould, D. Aitken, H. J. Cartwright, T. Greaves, J. Martin, R. C. Trigger, R. H. Cartwright, M. Tailby, A. Over, J. Reynolds, E. Meek, E. Beddard, H. Blunt, R. Cole, W. Dale, William Pritchard, L. Tipper, W. Ison, H. D. Pritchard, H. Collett, J. Phillips, A. Green, H. Perrins, and Edward Stanley, Hon. Sec.; Visitors, S. Gamgee, E. Faulkner, J. Allman, T. Chambers, J. Malcolm, H. Davies, H. Jordan, and H. Lepper. Letters were received from the following gentlemen unable to attend :—Professors Robertson and Williams, Messrs. P. Taylor, T. Taylor, A. Taylor, W. Lawton, W. Leather, G. Carless, C. Elam, J. Carless, and J. Wragg.

The minutes of the last meeting were presented and confirmed.

Proposed New Periodical.

The SECRETARY read the following letter :—"Central Veterinary Medical Society, October 7th, 1881.—Dear Sir,—The members of this Society think that full reports of the papers read and discussions held at our Veterinary Medical Societies should be printed in a separate form. With the co-operation of yours and other associations, sufficient literary matter would be forthcoming to keep a weekly record going. To guard against such a periodical becoming the organ of a clique, each society's secretary would correct his own proofs. A page for correspondence, and one for notes of interest, would be all the matter allowed, save that forwarded by secretaries of societies. If we all co-operate, the cost would be to each society a sum equal to sixpence per week for each of its members. For that each would receive free per post a weekly copy of the record. What are your ideas?—Yours truly,

"W. HUNTING."

The SECRETARY replied as follows:—

"Warwick, 12th October, 1881.—Sir,—The Midland Counties Veterinary Medical Association will hold a meeting shortly, when I shall have the pleasure of placing your letter of the 7th inst. before them.—Yours, etc.,

"EDWARD STANLEY."

The CHAIRMAN said that for his own part he did not think the proposed paper would answer. They had already, in the VETERINARY JOURNAL, full reports of their meetings, and unless they had paid secretaries to carry out the work suggested, he believed they would find some difficulty in bringing forward a weekly periodical of veterinary science.

Mr. WIGGINS proposed that the subject be not entertained, and Mr. GREAVES seconded the proposition.

Mr. PRITCHARD thought it was a matter that required consideration. He moved as an amendment, "That the consideration of the contents of this letter be deferred until our next meeting."

Mr. TRIGGER seconded the amendment, which was carried.

Election of Honorary Associate.

The CHAIRMAN said : The next business was the proposed election of George Fleming, Esq., as an honorary associate. Mr. Fleming was well

known for the interest he took in veterinary science, and was the able President of the Royal College of Veterinary Surgeons. He had, therefore, great pleasure in proposing that Mr. Fleming be an honorary associate of the Midland Counties Association.

Mr. BLAKEWAY seconded the proposition, saying they all appreciated the services Mr. Fleming had given in the interest of science. The proposition was unanimously carried.

Mr. FLEMING, in returning thanks for his election, said that if there was anything that rewarded a man for what he had done, and was likely to stimulate him to further exertion, it was the good-will, respect, and testimony and esteem of his fellow-men. What he had done was not for himself alone, but for them all. He took the high compliment they had paid him as an earnest of their appreciation of the labours he had undertaken on behalf of veterinary science in this country. He should always esteem it a high honour to come amongst them, and he had great pleasure in being a member of their association. (Applause.)

Pathological Specimens.

Mr. G. FLEMING said: A very important portion of the work of that meeting was the explanation of pathological specimens. Upon the objects before them remarks might be made, and from the illustrations valuable information might be derived by the other members. He had brought two specimens, one of which had already been shown at several meetings, and it was one of the most extraordinary he had ever seen. It was a calculus taken from a mare still alive and doing duty in a cavalry regiment. The calculus was expelled from the bladder of the mare while travelling from York to Aldershot. She was ill the whole of the way, and one evening the man in the stable waiting upon her found the calculus behind her after she had been straining violently. He had never heard of such a large calculus being expelled from the bladder before. The other specimen should have been exhibited by his friend Mr. Ison.*

The CHAIRMAN said the nasal polypus was a matter of great interest to them all.

Mr. E. STANLEY: Was there any hæmorrhage?

Mr. FLEMING: At the commencement of the operation a good deal, but none after the horse got up.

Mr. STANLEY: The wire must have gone through the neck of the tumour.

Mr. FLEMING: The tumour was divided in the middle by the wire, but broken at the base by the fingers.

Laryngisimus Paralytica.

Mr. G. FLEMING then read a paper on "Laryngisimus Paralytica' (Roaring).†

The CHAIRMAN said they were all much obliged to Mr. Fleming for his paper on the subject of Roaring. He had brought before them a good deal that was new, and a good deal worthy their consideration and trial. One matter which he believed was generally considered amongst them as being almost a certainty had received a rude shock from the paper. They had thought in this country that Roaring had been one of hereditary taint; but Mr. Fleming, in his paper, showed that Influenza and Strangles, and other diseases of the glands, had much to do with the disease of Roaring, in producing compression of the recurrent nerve. If this disease was not, as it was generally supposed to have been, hereditary, why was it that certain families did contract the disease from generation to generation?

* See description of this case—Osseous Polypus—in first part of Journal.

† Owing to the pressure on our space, this paper is held over until next month.

Mr. PRITCHARD did not agree with one or two points in the paper. He hardly fell in with the view that Roaring was created by the vocal cord being drawn or forced into the centre of the passage. He had a different opinion, and had frequently ventilated it, but he would now proceed to do so again. There could be no doubt that ninety-nine cases out of a hundred of Roaring were produced by paralytic condition of the recurrent nerves. There could be no doubt either, as a consequence of the paralytic condition of one of those nerves, loss of function, as well as loss of substance of the dilator muscles of the larynx took place. As a consequence of the paralytic condition of the nerve, they got a wasting condition of the dilating muscles. When that existed, he was of opinion the muscles on the other side of the larynx overpowered the muscles on the left, and as a consequence, the arytænoid cartilage, and not the vocal cord, was drawn across the opening. He believed exactly the same thing took place when they got a paralysed condition of the recurrent nerve during the act of inspiration. While an animal was in a quiescent state, respiration was going on quietly, and the cartilage was not drawn across the opening. A similar arrangement existed in the nostril of a horse standing perfectly quiet, but in excited respiration there was an extension of the opening. As soon as respiration became excited the sound muscles on the right side of the larynx drew the cartilage, and not the vocal cord, across the opening, and in that way sound was created. He was of opinion the cause of the left recurrent nerve becoming affected more frequently than the right, was due to excessive interchange of nerve-fibres between the left recurrent nerve and the nerves of the heart itself. He looked upon Roaring as primarily the pathological condition of the heart, rather than interference of the nerve by the lymphatic gland. The interchange of fibres was very considerable, and he was rather inclined to think in many instances it was produced in young thoroughbreds, by excessive excitation of the heart's action.

Mr. GREAVES did not follow Mr. Fleming nor Mr. Pritchard in the theory of this disease. The problems were not clearly solved yet, and they would take some time before they were clearly solved. It was well known that colts were found to be roarers when there was no excitation of the heart Mr. Pritchard spoke about. Many colts that had never had a halter upon them were roarers. How was that accounted for, if it were not hereditary? The fact of colts being roarers might be traced in some instances from the time they were born. That was either congenital or hereditary. As regarded the treatment, he had not tried electricity. It might be there was in that a source of power that would be of service to them when further tried. He hoped it would be so. He had had some experience in regard to acute roarers, and in those cases the muscles had not degenerated.

Mr. CARTWRIGHT said his views corresponded with Mr. Pritchard's as to causes. Roaring was traceable to hereditary causes in a great many cases as regarded thoroughbred stock.

Mr. PARKER was inclined to the view taken by Mr. Pritchard in regard to this malady. If Roaring was often the result of disease of the lymphatic glands, how was it cart-horses, which were more prone to that disease, did not become roarers more frequently than thoroughbreds? He thought Roaring was more often hereditary than anything else. As to treatment, he had tried everything except electricity, and he would try that.

Mr. MARTIN knew of hundreds of cases where there was Roaring before the animals were put to work. He had been in the habit of using electricity for roarers, and the results had been very good.

Mr. BLUNT considered Roaring to be often hereditary.

Captain RUSSELL never saw but one roarer while he was in India, and that was an English horse.

Mr. E. STANLEY said half-bred animals and Welsh horses were very seldom roarers, as compared with horses of other classes. In India horses were not roarers so frequently as in England, but that was in a great measure owing, he believed, to the natural formation of the horses, they being small in size. Many of the imported Australian horses, more nearly the size of our own home-bred troop-horses, were roarers, and we found a considerable number of Indian stud-bred horses, crossed with English sires, also roarers.

Mr. PERRINS said it was a most important question to decide whether Roaring was hereditary or not. He should like to ask Mr. Fleming what was his opinion with respect to breeding, whether he thought it was more in the mare than the horse?

Mr. H. M. STANLEY asked whether grunters were unsound when they did not make any roaring noise on exertion.

Mr. FLEMING, in reply, said that in at least ninety-five per cent. of cases of Roaring, the muscles on the left side of the larynx were chiefly affected. It was rare they found the muscles affected on the right side as well as the left. He could not agree that the action of the heart had anything to do with the production of Roaring in all or in many cases. It might be in special cases. If the loss of function of the nerve depended upon the action of the heart, they would expect to find the malady always existing in horses severely exercised, whereas almost always the contrary was the case. It was well known that horses would remain perfectly free from Roaring for a long time, and until they were attacked by Influenza, Pneumonia, Bronchitis, or Strangles. He thought, if attention was directed to the matter, those who had an opportunity of examining the lymphatic glands in the neighbourhood of the left recurrent nerve would be able to substantiate wholly or in part what he had advanced as to the true cause of Roaring. There were facts tending to show that the disease was hereditary, and also facts against this notion. If the disease were hereditary so far as the left nerve is concerned, surely it would be so in the right nerve! The fact remained, that whether horses were severely exerted or not, they would have Roaring produced in them, and they all knew how frequently Roaring followed pulmonary and bronchial effections. Amongst the diseases which produced Roaring, he knew of none so effectual as Strangles. Roaring was extremely rare in hot countries, and he was led to the conclusion that our stabling of horses—keeping them at a high temperature in foul air—and also our unfavourable climate, conduced to its production. He did not think "grunting" had a direct relation to Roaring, or that it was a sign of unsoundness in the sense that Roaring was. He was of opinion that it was not advisable to breed from roarers.

Several members considered grunting a symptom of Roaring, and as such should regard it with grave suspicion.

On the proposition of Mr. TIPPER, seconded by Mr. GREAVES, Mr. Fleming was awarded a very cordial vote of thanks.

Mr. SAMPSON GAMGEE made some very interesting and instructive remarks on the treatment of wounds, and received a vote of thanks, on the motion of Mr. RUSSELL, seconded by Mr. BLAKEWAY.

Mr. H. M. STANLEY proposed a vote of thanks to the President, which was seconded by Mr. S. GAMGEE.

It was decided to hold the next meeting at Derby.

EDWARD STANLEY, *Hon. Sec.*, Warwick.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 373.)

IT has frequently happened that a cow-keeper's stock is perfectly healthy until he buys a cow from a dealer, and in the course of a month or so Pleuro-

pneumonia appears in the new purchase, and the others are soon involved. One of many occurrences of this nature I will relate. A Mr. Walker, living in my locality, had twenty-eight fine cows at his farm—an isolated place, where no other cows could by any possibility get near them; there had been no contagious disease on this farm. He bought a cow from a cattle dealer, and in about a fortnight this animal manifested symptoms of Pleuro-pneumonia and was killed at once. But the contagion had fixed itself among his stock, and he lost no fewer than twenty-two cows. No doubt the disease was in the incubative stage in the newly-purchased cow, and it had come from an infected stock; but being purchased by the dealer at a market, it was found impossible to trace its origin further. This is only one of many instances I could relate, which prove conclusively to my mind the contagiousness of the disease.

Well, on the other hand, some members of the profession publicly maintain that this disease never arises spontaneously in England. But I know a farm in an out-of-the-way place, not near any high road, where the farmer bred his own Alderney cows, and from the most careful inquiry I learned that no new animal had come into the place, yet Pleuro-pneumonia broke out here, and this outbreak leads me to believe that in some cases it is spontaneously generated.

As we are not exclusively considering Pleuro-pneumonia, I do not think it necessary to describe its pathological anatomy; but I may in passing refer to the case tried at Durham last October, and reported in the VETERINARY JOURNAL, in which one of the witnesses asserted that in this disease only one lung, or a portion of one lung, was invariably affected. My experience is that it generally affects one side, but occasionally involves both sides. I have noticed particularly since the trial alluded to was published, and may now assert that in ten per cent. of the cases both sides are involved.

In enumerating some of the symptoms of the much-neglected disease —Tuberculosis or bovine Phthisis—it may be remarked that our talented President has written so much on the subject that he has quite exhausted it; so that it would be little else than presumptuous for us to attempt more than just draw attention to it, and make ourselves thoroughly acquainted with the symptoms, so as to be able to distinguish between it and Pleuro-pneumonia. Consequently, my observations will be confined to the symptoms exhibited when the tubercles have formed in the lungs, which, so far as my experience goes, are generally their seat, though they may be developed in other parts of the body. My attention was first attracted to this disease on reading about it in that useful work written by our President, and which every member of the profession should possess. I allude to "Veterinary Sanitary Science and Police."

The owner of a cow at first notices it to be poorly, but does not think it sufficiently amiss to send for a veterinary surgeon. There is a little dulness and disinclination to move; it does not feed so well as usual, and the appetite is fickle, and as the disease advances it becomes more capricious. The visible mucous membranes are pale at this stage. Then follows the frequent hacking cough, which is stronger than that of Pleuro-pneumonia, and is not so painful and thin. The secretion of milk is not so much affected in quantity at first, but this constant distressing cough seems to wear the animal out, and produces a degree of lassitude similar to that of Phthisis in mankind. In Pleuro-pneumonia, it may be noted that there is indigestion—the rumen containing a quantity of hard food; and there is this also in Tuberculosis, and in each disease, from the sympathy existing between the lungs and stomach, through both being supplied by the pneumogastric nerve, there is a grunting sound, which leads to Tuberculosis being often

mistaken for Pleuro-pneumonia. But in the former the grunt is not apparently so painful or so involuntary as in Pleuro-pneumonia, and is more of a moan ; though nothing but experience and observation will enable any person to distinguish between them. The constitution soon becomes affected, and Hectic Fever sets in. There is a tight, unhealthy appearance of the skin, with the hair dry and erect. In the early stage there is constipation, but towards the end diarrhœa sets in, and with it great prostration. Percussion on the ribs and back causes pain, as it does in Pleuro-pneumonia. So far as my experience goes, auscultation does not assist us much in distinguishing between the two diseases, neither does the thermometer, as it rises to about the same degree in both—from 103° to 106°, or thereabouts. As the malady advances, there is an exacerbation of the symptoms. The last cases I saw in the final stages were two cows purchased from a dealer, and supposed to be suffering from Pleuro-pneumonia. I was called in as inspector, and found both animals lying on their sternum, and their head protruded, nostrils dilated, and discharging a muco-purulent frothy matter from these openings as well as the mouth ; the nose was hot and dry, and crusted with the discharge ; the ears drooped as in the Cattle Plague, and the cough was very troublesome. There was complete inappetence and loss of milk, and profuse and passive diarrhœa, the fluid being dark-coloured and fœtid. They died in a few days, and doubtless they were both diseased when purchased, as they were only in the possession of the farmer one week. Cows affected with Tuberculosis can be sold with impunity at any market, and neither veterinary inspector or policeman has any power to prevent their movement. It should be included in the Contagious Diseases (Animals) Act.

I am not pretending to read a paper on Tuberculosis, but it may be well, and especially with regard to discussion, to refer to its transmissibility or contagiousness. I have not had an opportunity of clearly proving this attribute of the disease, although I have often seen several cows in the same stock affected ; but there seems to be as much doubt on this point as with regard to the communicability of Phthisis in mankind. Mr. Fleming, in his "Sanitary Science and Police," does not write from his own experience, but quotes the results of observations and experiments of several continental veterinarians, who speak with some degree of certainty as to its infectiousness and contagiousness ; though others have questioned the accuracy of these observations and experiments. Therefore, I do not think we are able to decide the matter at present ; but with further and faithfully recorded observations we may at some future time be able to assist Government in taking action with regard to the disease. In the VETERINARY JOURNAL for last February, Mr. Fleming gives some very interesting and instructive experiments by the German veterinary surgeon Albert, which almost conclusively prove that this malady can be, and is, communicable by contagion. But what is more important for our future investigation is its transmissibility from the cow to man, and especially as the flesh and milk are not in any way prohibited from being sold as food. The hereditary tendency to the disorder has been abundantly demonstrated, and all who have written on the disease agree upon this point. It has been asserted that the milk from tuberculous cows given to pigs has given rise to the disease in them. Therefore, to say the least of it, such milk must be injurious to the public health, even if it does not produce Phthisis, as some authorities more than suspect.

With regard to distinguishing between Tuberculosis and Contagious Pleuro-pneumonia, it must be remembered that the first-named, like human Phthisis, may remain a long time in a latent state, and until some decided symptoms become manifest the presence of the disease cannot be decided

upon. In the human malady, we see consumptive persons looking pale and gradually wasting away, and only time is required to develop the prominent and unmistakable symptoms of the fatal malady. Last month I had a cow killed at an advanced stage of Tuberculosis; it had been affected for six months, but showed no other symptoms than wasting away until it became a perfect skeleton. It always had a capricious appetite, and there was no coughing or grunting. I diagnosed it as a case of Tuberculosis, simply because I had witnessed similar cases. This animal was standing beside other two cows in a shed, and had been turned out to graze along with them all the summer. These remain healthy at present. I exhibit a portion of the lung of the diseased animal, to show the extent of the lesions. Another portion of a lung is also laid out for inspection. It was obtained from a fat bull which gradually began to waste, and was killed for food in ten days after his wasting first began. It was incessantly coughing, and any practitioner who heard it could not mistake the disease for Pleuro-pneumonia.

I mention this instance more particularly to show the difficulty a veterinary surgeon is placed in, as if he thinks there is danger in consuming such flesh, and insists upon the carcase being buried instead of being consumed by people, his services are not likely again to be called into requisition by the owner. The carcase of this bull realised £18, and it is not in a farmer's nature, or in human nature in any capacity, to lose that product unless the law interferes. Therefore, I think we shall be unanimous in our opinion that this scourge should be included in the Act. The owners of such diseased animals should be compensated, and the carcase buried. I may note that the bull in question was standing among a lot of cows, and they are all apparently healthy at the present time.

In my experience there is considerable difficulty in distinguishing between Tuberculosis and Pleuro-pneumonia in their early stage, as both have similar symptoms, and indeed in cows suffering from diseases of the digestive organs, or in those which had swallowed a bodkin, needle, or piece of wire, I have noticed symptoms not very unlike those of these maladies. But when they have advanced to another stage, the two are easily distinguished from each other. The eye in Pleuro-pneumonia has a peculiar indescribable expression—a glassy appearance, as if of pain and distress; there is also the dry, husky, short and painful cough, that no experienced veterinary surgeon can mistake, with the involuntary grunt at nearly every expiration. Tuberculosis is less rapid in its course, and continues for a long period; there is wasting without any very decided or reliable symptoms being developed. There is no grunt, but rather a moan; the cough is more frequent, and is of a harsh, hard, phthisical character, which much distresses and exhausts the animal. Of course, in both maladies there is emaciation, prostration, and diarrhœa towards their termination.

A most important question for solution is whether the flesh of animals affected with Pleuro-pneumonia and Tuberculosis is injurious to persons who consume it. There can be no doubt that the veterinary surgeon who sees and treats diseased animals from beginning to end of their illness, examines their carcases to ascertain the ravages of disease, knows where and how the flesh is disposed of and the appearances it presents, possesses facilities which are not accessible to any other person, to enable him to give a reliable opinion on this highly important sanitary question. There have been, and are now, many conflicting opinions among medical men—human and veterinary—as to whether partaking of the flesh of an animal which has suffered from Pleuro-pneumonia is hurtful to people; and this conflict among authorities very often places magistrates and other local authorities in a very embarrassing position, when they have to decide whether to order the carcase of such an animal to be buried, or to be disposed of for human consumption.

They naturally look to the veterinary inspector for a trustworthy opinion, and he has generally to assume the responsibility of advising. This renders it all the more important that we should discuss the question from time to time, in order that the views on the matter may be clear, exact, and unanimous.

In the Contagious Diseases (Animals) Act, it is specified that "every person having in his possession a head of cattle affected with Pleuro-pneumonia must, with all practicable speed, give notice of the fact of the animal being so affected to a constable." If he fails to do so, the compensation to which he would otherwise be entitled is forfeited, and he is liable to be summoned before a magistrate and fined for not giving such notice. This law is judicious from a sanitary point of view, because we, as a rule, invariably have an opportunity of seeing the animal in the earlier stage of the disease, and when the flesh looks healthy. Mr. Fleming very correctly describes the appearance of healthy flesh, in his work on "Sanitary Science and Police," as firm and elastic. It cuts well, has an uniform red tint, and the interstitial connective tissue is rather dry than moist. When newly cut there exudes from it, especially on slight pressure, a highly-coloured, slightly acid juice, possessing an agreeable odour, which is most marked, perhaps, in cooking. It is necessary that we should make ourselves practically acquainted with the appearance of healthy meat. In the latter stages of Pleuro-pneumonia, we find the flesh moist, soft, and flabby, and full of serum. This is, no doubt, deficient in nutritious properties, and in cooking it shrivels and wastes, instead of increasing in bulk. In warm weather it soon decomposes. During the incubative period of the malady, while the animal is apparently in good health and feeding well, the flesh cannot be in any way objectionable. When the disease makes itself manifest, then notice is given to the inspector, and the animal is at once slaughtered. From the appearance of the flesh at this stage, I contend that it is quite fit for food ; though some persons maintain that the disease, being so insidious, is already far advanced before it is detected. We often find that in those cases in which the symptoms are least marked, the lesions in the lungs are most advanced, and *vice versâ*, a circumstance difficult to account for.

If we consider this a blood disease, and admit that the germs are conveyed, through the medium of the blood, to all parts of the body, in my opinion the process of cooking must destroy the vitality of these germs. No writer, to my knowledge, has ever given any reliable facts as to the injury produced by such flesh to those who ate it ; but we have abundant evidence that this flesh has for years been consumed with absolute impunity. In the VETERINARY JOURNAL for last January, reference is made to the statement of a M. Loiset, veterinary inspector at Lille, France, who reports that the flesh of 18,000 cattle affected with this disease was eaten without giving rise to any complaint of any kind. The subject was discussed at the meeting of the British Medical Association at Cambridge last November, but I could not find that any one present gave any reliable evidence as to the hurtfulness of this flesh.

I hold three appointments as inspector under three different local authorities, and my districts have been hotbeds for Pleuro-pneumonia. I have allowed diseased animals to be slaughtered, and their flesh issued as human food on my own responsibility. I have inspected every carcase, and know for a fact that they have all gone to feed one body of men; and I have watched and inquired whether these suffered at all. They have remained unaffected by any disease which could be attributed to their animal food. One butcher I know gives his servants a piece of meat every Saturday, and they invariably ask for a piece of cow's flesh they know has been slaughtered while suffering from Pleuro-pneumonia, simply because they get a larger piece.

It has been stated that the presence of so much pus in the cow's chest must necessarily injure the flesh. Generally speaking, there is an absence of pus, and simply consolidation of lung and effusion of serum, the lesions being confined to the chest. Besides, if there was absorption of pus we should have Pyæmia and all its concomitant symptoms. If the malady ran on to the later stages, and the animal was emaciated, I should decidedly approve of the carcase being buried. I believe a Commission is to be appointed by Government to inquire into this important subject.

With reference to the Orders in Council on slaughtering cattle, it may be remarked that some veterinary surgeons have expressed their opinions in very decided language, to the effect that when Pleuro-pneumonia breaks out in a shed or premises all the cows which have been in contact with the diseased animal should be killed. This wholesale slaughter, however, requires a considerable amount of judgment. If a cowkeeper, for instance, has fifty cows, and one a few weeks after purchase shows symptoms of the disease, not only had this to be killed, but all the others also; and though the owner may be compensated to their full value, yet the affair may be ruinous to him, through losing the trade it may have taken years to establish. I think, if we keep a vigilant look-out upon the men who deal in these cattle, who buy from cow-keepers, who sell when they find disease on their premises, and before they give notice of its existence, and frequently after the fifty-six days fixed by Order of Council as the limit of latency, it would be extremely beneficial, for, in many instances, the animals are sold in different parts of the country, and so the contagion is disseminated. I think this has been pretty clearly demonstrated by the effect of the last restrictions placed on the movement of cattle and closing the markets. For years previously I always had outbreaks occurring in one or other of my districts, but since these restrictions have been rigidly enforced I have only had one case.

Are the flesh and milk of tuberculous animals fit for human food, or are they capable of communicating disease to those who consume them? I wish to condense this subject as much as I consistently can, in order to make my paper as concise as possible. Therefore I shall omit the detailed statements of all those veterinarians and others who have made experiments to prove the communicability of the disease from the bovine to other species. Rightly or wrongly, we know it as a fact, that all tuberculous cows go to the butcher, and also that their milk is allowed to be consumed as food. I must confess that I have not had sufficient opportunity of inquiring into this most serious question—affecting, as it does, the health, even the life of mankind; nor have I been able to devote sufficient time to trace whether any pernicious effects have followed the use of these articles. But it behoves us as veterinary surgeons to thoroughly investigate and understand the malady, as our professional knowledge and opportunities give us facilities which other scientific men do not enjoy; and if we avail ourselves of these, we may be able not only to throw much light on many obscure points with regard to the disease, but guard the public against what, there is much reason to fear, is a grave danger, by preventing poisonous food being sent into the market.

Several continental veterinarians have spared no pains in making experiments, and have conclusively proved that the milk of tuberculous cows is capable of transmitting the disease, not only to their offspring, but also to other species. We must, therefore, infer that it contains the germs or virus of tubercle. It has also been shown that the milk from tuberculous cows produces the disease in pigs fed upon it; and it would seem that cooking does not destroy the virus. One continental veterinarian mentions several instances in which young children who had received such milk died, and they were found to be affected with Tuberculosis; and English veterinarians assert that they have traced the occurrence of Phthisis in families to

partaking of such milk. There is some difference of opinion with regard to the relationship between this malady and Pleuro-pneumonia. There can be no doubt that Tuberculosis is both hereditary and chronic, which is not the case with Pleuro-pneumonia. We find the tuberculous matter in different parts of the body, sometimes even among the muscles. Mr. Fleming, in his valuable and instructive pamphlet on Tuberculosis, has shown us that it is a truly inoculable disease, and that it can also be produced by the ingestion of tuberculous matter. With these facts before us, there can scarcely be two opinions that the flesh and milk of tuberculous animals is unwholesome, and as cooking does not destroy the virus, these should not be permitted to be used as food, as they may lead to the production of Phthisis. Surely it is high time that the danger incurred by allowing such food to be sold should be recognised by the Government, and steps taken to limit the spread of the disease, if not to altogether extinguish it. So far as the public health is concerned, it is the most serious malady affecting cattle, and should no longer be neglected.

The PRESIDENT complimented Mr. Martin on his well-written paper on a subject which was of the greatest importance, not only to themselves as a profession, or to the medical profession, but to the public. They were all in a position, and especially those who practised in the country, to make themselves acquainted with both maladies. Pleuro-pneumonia was decreasing in the country; Tuberculosis, on the other hand, was gaining ground, not only in England, but in many other countries. In Mexico especially it had proved very fatal among cattle. It had come to be a grave question whether man himself was not in danger by the existence of the malady. There was no class of men better fitted or able than those he saw before him to trace out its nature—to say how far it might be infectious in animals suffering from it, and how far it was transmissible to healthy cattle, and from cattle to mankind. Their Secretary had done well in introducing the subject to their notice, because he (the President) maintained they were in a better position to express views with regard to it than any one else. He believed it was one that the country would expect them to share in studying and illustrating, and he thought at those meetings a large amount of good might be derived in discussing it.

An interesting and profitable discussion followed, in which the speakers were Capt. Russell, Mr. Garside, Mr. Greaves, Mr. Edgar, Mr. Burt, Mr. Farrance, Mr. Stock, the Chairman, and others.

The following resolutions were subsequently adopted:—1. "That the flesh of animals which have been affected with Contagious Pleuro-pneumonia in the early stage is not unfit for human food." 2. "That such flesh, in the latter stages, is not fit for food." 3. "That Tuberculosis should be brought within the operation of the Contagious Diseases (Animals) Act." 4. "That the flesh and milk of tuberculous animals should not be allowed to be consumed as food." 5. "That a committee be formed of members of this Association to draw out a resolution, to be forwarded to the other associations in the United Kingdom, to obtain their opinion and concurrence in petitioning the Government to include tuberculous diseases in the Contagious Diseases (Animals) Act."

THE VETERINARY MEDICAL ACT.

The PRESIDENT, in explaining the provisions of this Bill, alluded to the threatened difficulties which confronted the efforts put forth to pass it. There were no fewer than five motions on the Parliamentary paper at one time to throw out the Bill altogether, whilst of amendments instituted to defeat the primary objects of the measure there were no end. Mr. Mundella, the Vice-President of the Council, confessed to him that unless he could remove the

opposition raised to the Bill outside, their efforts to pass it would be entirely fruitless. How the motions were got off the paper, the amendments modified or withdrawn altogether, and how the Bill finally passed, would be a story almost too wearisomely long to listen to, nor would it be very agreeable. The Bill, as they all knew, had become law, and it came out of the House of Commons in the same condition almost as that in which it entered it. (Applause.) That was a result he certainly did not anticipate. He could not think the Commons would ever allow a Bill to pass containing a five-years' retrospective clause. It was an occurrence almost unparalleled in the history of Acts of Parliament for a Bill to operate five years backwards. Mr. Mundella, by great judgment and a large amount of strategy, managed to get the Bill through almost on the last day of the business of the Parliament. It was now inscribed in the statute-book, and it was one of the greatest steps the profession had ever taken in this country. They stood in a position now equal to that of any other profession. They had got a better Act of Parliament than the medical men, and they had, by 1,000 per cent., got a better one than the dentists two years ago. (Applause.) There had been some complaint in some quarters by unreasonable or unthinking men that the Act put unqualified men on the same footing as the qualified. Nothing of the sort; if anything, the unqualified men were shown up to the world, and their condition exposed. They were placed in a separate list or register, as unqualified practitioners. In the course of two years no man could assume a title likely to mislead the public. It was the death-blow to imposition and quackery, and it was a new birth for their own profession. (Loud applause.) He did not think any of them who studied the Act would find any fault with it. They stood on a new footing; they were a profession recognised by Act of Parliament and by the country. Having a new position they had also a new responsibility, and that was, to extend and raise the science to which they had devoted their lives. (Loud applause.)

Mr. GREAVES said the exertions used on their behalf by the present President had been productive of more good to the profession than the efforts of all his twenty-six predecessors put together. He had had some little experience of Mr. Fleming's earnestness and desire for serving their profession, and if there was one man who deserved credit for his actions it was he. He (the speaker) was only sorry any member of the profession should have opposed him. (Hear, hear.) They had all felt the injurious effects of the system which enabled men who had never spent a shilling on their education, nor studied a single hour, to practise their profession. Such men could take the means of living out of their hands, notwithstanding that they had devoted years of toil, and gone to considerable expense, in fitting themselves for the work they had to do. (Hear, hear.) They had been robbed and robbed, and society also had been robbed. (Hear.) Their President had determined to put an end to it, and they all rejoiced that his aims had been carried into practical effect. For his great energy shown in preparing and forcing on the Bill he was entitled to their warmest thanks; but it was not simply in regard to that matter that he had endeared himself to all honest members of the profession. His labours had ever been made in their behalf, and his efforts throughout had been directed to setting them upon a better footing. (Applause.) He begged to propose that the hearty thanks of the meeting be accorded to Mr. Fleming. (Renewed applause.)

Mr. MARTIN had great pleasure in seconding the proposal. He had known Mr. Fleming many years, and he did not think any one could have worked so assiduously and unselfishly; because, considering his position, he was quite independent of the profession. But while not seeking to improve his own position, he had undoubtedly promoted their interests, and they must congratulate themselves upon having such a man associated with them, who

had produced so much valuable literature for them, and had striven to elevate their position. His indomitable perseverance, his industry, learning, and kindly manner had combined to produce the results over which they were now exulting. In everything he set himself to do he invariably succeeded. He was entitled to their best thanks as one of the best men they ever had in their profession, and it was a great blessing that his lot had been cast in with theirs. (Applause.)

The vote was carried by acclamation.

The PRESIDENT, who, on rising, was greeted with applause, said he had been trying to avoid all this eulogium. He took all their compliments and remarks in the very best spirit, and with the greatest amount of gratitude. He did not think there was anything to which he was more passionately attached than the profession with which they all loved to be connected, and he was desirous, therefore, of raising it to the utmost of his ability. He had had the opportunity, the desire, and to some extent the ability and strength, to further its interests, and he had no hesitation in saying it was worthy of the highest intellect of man. The animals they had taken under their charge required certainly the utmost care and consideration. He looked upon an animal that lived for us and toiled for us as deserving of as kindly and skilful treatment as a human being. The young members of the profession would stand on far different ground to that their predecessors had occupied. The Act of Parliament, in passing which he had been personally instrumental, would place them on a footing their elder brethren could not have dreamed of. He did not feel in the least elated at the success of what he had undertaken, but he did feel very grateful that he had been favoured with health, strength, and a resolute will to assist in elevating their noble calling. (Applause.) He looked upon the Veterinary Surgeons' Act as the crowning effort of a life devoted to the profession. For the last quarter of a century he had been aiming at the very object which had now been so completely and satisfactorily attained. He saw during that long period that unless they could show the public some reason for obtaining protection, show them that theirs was a learned and useful profession, and one to a large extent to be supported, they would never get that protection, and that feeling of honour and respect shown them, so essential and so desirable for every profession if it was to thrive. (Applause.) There were many things in the Act beyond mere protection, that would go a long way to put them on a splendid footing. The benefits it conferred were far more numerous and valuable than he thought they would get. It seemed to him there was nothing more they could ask for. All the requirements of their profession were supplied. Their list of qualified members would increase year by year, whilst the names on the unqualified register would gradually dwindle away. Not a very long time would elapse before there was not one unqualified man practising veterinary medicine in these kingdoms. (Applause.)

Mr. MARTIN adverted to the valuable time sacrificed by the President in his exertions in his efforts to secure the enactment of the Bill, and pointed out that the Act would not cost the profession one penny. (Great applause.)

The PRESIDENT explained the different clauses in the Act, and how it was proposed to carry them into effect.

Mr. STOCK suggested that regulations with regard to professional etiquette should be drawn up, but

The PRESIDENT was afraid they would have some difficulty in enforcing rules of that nature, which, he also thought, it was scarcely possible to frame.

The subject dropped, and the meeting shortly afterwards terminated.

The members subsequently dined together at the Pavilion.

YORKSHIRE VETERINARY SOCIETY.

THE concluding quarterly meeting for the year was held at the Queen's Hotel, Leeds, on 27th October; the President, Mr. J. H. Ferguson, in the chair. The following members were also present; viz., Messrs. Naylor, Jas. Freeman, Anderton, J. S. Carter, G. Schofield, Peter Walker, Deighton, Geo. Carter, J. Tatam, B. Smith, T. C. Toop, and the Secretary. Messrs. Fraser, Greenhalgh, and C. Secker, jun., were present as visitors. Apologies for non-attendance were received from Messrs. Dray, Greaves, Danby, Snarry, Fallding, and J. and J. Freeman. The minutes of the previous meeting were read and confirmed. Mr. T. C. Toop, M.R.C.V.S., was unanimously elected a member.

Mr. BENJ. SMITH complained that his fees as an inspector had been reduced.

Messrs. NAYLOR, SCHOFIELD, and CARTER stated that no alteration had been made in their fees, and therefore the matter must be attributed to the parsimony of the magistrates in Mr. Smith's division.

The PRESIDENT made a few remarks upon the altered state of the profession, upon entering upon the new life given to it by the passing of the Veterinary Medical Act.

Mr. WALKER related the particulars of a difficult case of parturition in the cow, and exhibited a photograph of the calf.

In consequence of Mr. Nettleton being unable to fulfil his promise of reading a paper for discussion at this meeting, owing to ill-health, Mr. TOOP kindly volunteered an essay upon "Charbon, or Anthrax." The essayist reviewed this fatal affection in a highly scientific discourse, and upon the conclusion of the essay it was unanimously resolved that the paper be forwarded to the editor of the VETERINARY JOURNAL for publication.* A vote of thanks, moved by Mr. Naylor and seconded by Mr. Freeman, was unanimously awarded.

Mr. NAYLOR did not agree with some of the contents of the paper. He invariably found his patients dead upon his arrival, thus affording little or no time for remedial measures to be adopted; had never seen an Anthrax patient exhibit signs of spasm; upon some occasions had not been able to detect the presence of Bacilli.

Mr. FREEMAN was of opinion that Anthrax may be produced by other means than contagion; had invariably found animals living on nutritious food to be affected with Anthrax; had seen pigs affected with Diphtheria after eating the products of Anthrax.

Mr. G. SCHOFIELD did not think Anthrax so contagious as the author asserted; was of the opinion that the disease may be produced by decomposing organic matter; recommended setoning, with the exhibition of saline purgatives, as preventive treatment.

Mr. GEO. CARTER had seen animals, after eating Anthrax products, affected with boils, along with effusion of yellow gelatinous matter; had seen a horse die in a very few hours after eating the hay (taken away) left by a cow stricken with Anthrax, the horse showing symptoms of acute Laryngitis.

Mr. TATAM said that he had seen large outbreaks of Anthrax, under the name of "Loodiana Fever," in India, where it could not possibly arise from decomposing animal matter, but was supposed to be caused by miasmatic influences.

Mr. TOOP, in replying, related some special outbreaks of Anthrax, and had seen preventive treatment highly efficacious. The *Bacillus Anthracis* can

* This essay is unavoidably held over until next month.

only arise from Bacilli, and must be introduced into the system of an animal. He said there could be no doubt respecting the contagiousness of Anthrax.

The TREASURER (Mr. Ferguson) read the financial statement for the year, showing a balance in hand of £111 3s. 10d.

The election of officers for 1882 resulted as follows :—Mr. Joseph Freeman, Keyingham, the President ; Messrs. Ferguson, ex-President, James Freeman, and Deighton, Vice-Presidents ; Mr. Broughton, Hon. Secretary ; Mr. Ferguson, Hon. Treasurer.

A unanimous vote of thanks was awarded to Mr. Ferguson for his efficient conduct as President during the year.

Refreshments, by invitation of the Leeds members, were provided.

W. BROUGHTON, *Secretary.*

SCOTTISH CENTRAL VETERINARY MEDICAL SOCIETY.

A PRELIMINARY meeting of members of the veterinary profession located in Dundee and surrounding district was held at the Crown Hotel, Dundee, on 20th September, 1881, at which the following gentlemen were present, viz.: Mr. A. Reid, Auchtermuchty ; Mr. G. Philp, St. Andrew's ; Mr. Peter Galloway, Errol ; Mr. David Constable, Inchture ; Mr. W. D. Hunter, Dundee ; Mr. John Jack, Dundee ; Mr. Robert Black, Lochee ; Mr. Peter Hampton, Arbroath ; Mr. Jas. Ritchie, Forfar ; Mr. Jas. Cairns, Broughty Ferry ; Mr. Alex. Johnston, Perth ; Mr. Andrew Spreull, Dundee.

It was moved by Mr. JOHNSTON, Perth, and carried unanimously, that Mr. Spreull take the chair.

On this being done, letters of apology for absence and regretting their inability to attend were then read from Mr. Lowe, Perth ; Mr. Bisset, Brechin ; Mr. Thomson, Lochee ; and Mr. Jas. Clark, Coupar Angus, and the Chairman proceeded to explain to the meeting the object for which it had been called. After referring to the fact that the want of some such local association had long been felt and acknowledged—at which the members of our common profession could meet in a friendly way and discuss such questions as might for the moment be most important in either the domain of science or of veterinary politics—it was unanimously resolved that this meeting form itself into a veterinary association, to be called the "Scottish Central Veterinary Medical Society."

It was next resolved that the meetings of the Society be held quarterly, and alternately in Perth and Dundee, but that the first meeting be held in the Crown Hotel, Dundee, on Tuesday, 8th November prox. at two o'clock p.m.

It was further resolved that the minutes of this meeting be printed, and that a copy thereof be sent to all members of the profession located within the boundaries of the counties of Fife, Forfar, and Perth, with the invitation that they, and all others so situated that they may conveniently do so, become members of this association.

All such members of the profession, wherever situated, making application by letter to the Secretary on or before the meeting of the association, to be held on 8th November prox., were to be admitted members of this Society without the necessity of a ballot, and to be enrolled as such on conforming with the rules that were to be submitted for confirmation at that meeting.

The Chairman having submitted the rules and regulations of the Scottish Metropolitan Veterinary Medical Association as a basis for the rules of this society, they were, after discussion and alteration, generally approved of, and as altered were to be brought up for confirmation at next meeting.

Mr. JOHNSTON then proposed, and Mr. REID seconded, that Mr. Spreull be elected President.

Mr. SPREULL moved, and Mr. HAMPTON seconded, that Mr. Ritchie be a Vice-President.

Mr. JOHNSTON moved, and Mr. CONSTABLE seconded, that Mr. Reid be a Vice-President.

Mr. CONSTABEE moved, and Mr. JOHNSTON seconded, that Mr. Robertson Madderty, be a Vice-President.

Mr. SPREULL moved, and Mr. REID seconded, that Mr. Philp be elected Treasurer.

Mr CONSTABLE next moved, and Mr. RITCHIE seconded, that Mr. Clark be elected Secretary.

On these motions being put to the meeting they were unanimously carried, and the above gentlemen were then all declared duly elected.

The Chairman having intimated his willingness to address the next meeting, and a vote of thanks having been accorded him for his conduct in the chair, the meeting separated, highly pleased with the prospects of success for the association.

In the absence of the Secretary,
ANDREW SPREULL, *Hon. Secretary, pro tem.*

MONTREAL VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this association was held in the lecture-room of the Veterinary College on October 13th, Mr. C. J. Alloway, V.S., President, in the chair. As this was the first meeting of the season, the retiring President delivered an address reviewing the work of last winter. The financial statement was read, showing a balance in favour of the association. The Librarian's report showed about 400 volumes in the library, all the latest works having been added. The election of officers for the ensuing winter was then held, with the following result :—President, Jas. Bell, M.D. ; 1st Vice-President, M. C. Baker, V.S. ; 2nd Vice-President, Wm. McEachran, M.D., V.S. ; Secretary-Treasurer, Mr. Fred Torrance ; Librarian, Mr. J. A. Chandler.

The following gentlemen were proposed as members of the Association : Henry C. Kingman, W. P. Robins, J. E. Gardner, W. H. Klock, E. P. Ball, Geo. Remucks, and J. A. Bishop.

The first regular fortnightly meeting was held in the lecture room of the Veterinary College on 27th October, Mr. M. C. Baker, V.S., 1st Vice-President, in the chair. After preliminary business, the following gentlemen were balloted for and duly elected members : Messrs. E. P. Ball, Henry Kingman, Geo. Kennicks, T. A. Bishop, J. E. Gardner, and W. H. Klock. Messrs. John Henry, jun., and C. P. Drake were proposed as members.

Professor OSLER, of the McGill University, then delivered an address, in which he gave an account of his recent visit to England, during which he attended the meetings of the British National Veterinary Congress as the representative of this College. He gave an interesting *resumé* of the proceedings of the Congress, and paid a high tribute to the zeal and professional ability of the energetic president, George Fleming, F.R.C.V.S., to whom, with Mr. J. H. Steel, the unqualified success of the Congress was in a great measure due. He also referred to the pleasing fact that the profession had taken a forward step there in securing status and protection by the passage of the Veterinary Surgeons Bill. In the discussion which followed, Mr. C. J. Alloway, V.S., referring to the state of the profession in that province, regretted very much that no such protection was given to the profession

there. Having been informed that the Lieut.-Governor, by an Act recently passed by the local Legislature, possesses discretionary powers in this matter, he therefore moved, seconded by Dr. Wm. McEachran, "That the Principal of this College be requested to call a meeting of the qualified veterinary surgeons practising in the province of Quebec, for the purpose of taking steps to secure the most favourable legislation possible for the protection of qualified veterinary surgeons in this province.

Professor MCEACHRAN was then called on to read his paper on a disease which has prevailed in the county of Pictou, Nova Scotia, for the last thirty years. He described minutely the history, symptoms and *post-mortem* appearances of the disease, as observed by himself in 1880, and by Dr. Wm. McEachran in 1881. He indicated that the disease was "dropsical" in character, and promised at a future date, after the present investigation which is being held by the Dominion Government is completed, to lay before the Association all the facts connected with this disease, which is one that has hitherto had no place in veterinary nomenclature.

EDINBURGH ROYAL (DICK'S) VETERINARY COLLEGE.

THE inaugural lecture to the session at the Edinburgh Royal (Dick's) Veterinary College was delivered on the 24th October in the Council Chamber by Principal Walley, in presence of a large assemblage of students and others. Bailie Colston presided, and among the other gentlemen present were Bailie Hall, Councillors Turnbull, Macdougald, Tait, Hay, Baxter, Russell, and Milne; Emeritus Professor Balfour, Professor Aitken, and Mr. Jas. Farlie, Edinburgh Wool Sales.

Bailie COLSTON, in opening the proceedings, said this was the fifty-eighth year of the existence of the College, which owed its existence to the long-continued labours and benevolence of the late Professor Dick. This year the veterinary institutions of the kingdom opened under new auspices. The Council of the Royal College of Veterinary Surgeons, the representative of the body corporate, had succeeded in obtaining, through the Veterinary Surgeons Act, the recognition and protection of the Legislature. This placed the profession on such a footing as must raise it in the estimation of the country at large. The Council had also succeeded in making such arrangements as would secure equal rights in the examination for the diploma to all the colleges in the kingdom. The Depute City Clerk (Mr. Harris) deserved credit for the clause which he got inserted into the Act with reference to the students graduating at the Scotch colleges. The Royal College of Veterinary Surgeons was simply a licensing body. At the present time it was the only licensing body in existence in the kingdom. Veterinary schools were simply teaching institutions, and were not empowered to grant degrees of any kind. The Council of the Royal College of Veterinary Surgeons was the representative body of the profession. In the elections to it every member had a vote. It consequently included a number of Scotchmen and other graduates of the Dick College. The examining body was appointed by the Council, and was composed of a fair proportion of representatives of Scotch veterinary medicine, and of the sister profession. Many of those who examined in the London section of the Board did the same duty on the Scotch Board, and *vice versa*. The Scotch section sat, as occasion required, in Edinburgh or Glasgow.

Professor WALLEY then delivered his inaugural address as follows: Bailie Colston, Ladies and Gentlemen, "The survival of the fittest in nature" is an axiom now universally accepted. Every system—scientific, political, social or otherwise—which deserves to do so, and which possesses sufficient inherent vitality, becomes a recognised part of the economy of the universe.

Twenty-two years ago only a small percentage of those who, like myself, assisted in the resuscitation of the great Volunteer movement in Great Britain, could have formed even an approximate estimate of the dimensions to which it has attained to-day. Ever growing and expanding, yet concentrating and consolidating, it has by its own inherent vitality, or rather by the vitality of its living units, developed into a force which has no parallel in the history of the mightiest country of the world ; and who amongst us can say what its condition will be two decades hence ?

As the years roll on, and the ever recurring period of opening of the Scholastic Session returns, the educational and scientific world becomes flooded to satiety with a stream of introductory addresses, and to him who has this perennial task to perform, it often becomes a matter of grave concern as to what subject he shall choose for his harangue, or from whence he shall obtain the material for its composition ; and were it not that a concatenation of favourable circumstances has arisen during the past year, I am bound to confess that I should just now have been amongst those who, having exhausted their stock of inaugural matter, have been obliged to fall back upon common-place remarks, or on egotistical references to the Institutions with which they are connected.

In no single year of its existence have so many circumstances of an important character occurred in connection with the veterinary profession as during the past twelve months ; and I think it will be both interesting and instructive if we devote a short time to the consideration of these. This is, indeed, all the more necessary when we find that even noble dukes and others holding a high position in the social scale, entertain but hazy and crude ideas of the aim and scope of the profession, or of the character or composition of its governing body.

Like the sister profession, veterinary medicine and surgery had its origin in an ignorant and barbarous empiricism ; the cowleech, the farrier, the emasculator were its fathers, as were the barbers and apothecaries of the medical profession, and though its progress towards the light has been slow, fitful, and chequered, it has now attained to a position such as few of its early originators could have imagined, even in their most enthusiastic hopes.

Whatever may have been the position [or accomplishments of the early pioneers of the art in this country, no attempt was made to place the profession on a footing worthy of its aims and aspirations by any of our native practitioners, and it remained for France, which had already placed itself in the van of progress, the first public veterinary school being established at Lyons in 1761, to provide the stimulus to the systematic development of the teaching portion of the profession.

Nearly one hundred years ago (1788), the first attempt to establish a veterinary school in Great Britain was made by a French veterinary surgeon, Charles Vial de St. Bel ; but as frequently happens when individuals attempt to benefit their fellow-men, his proposals were received with disfavour, and he temporarily abandoned his project ; but taking it up again two years later, under more favourable auspices, he successfully launched the "London Veterinary College" in 1791.

Curiously enough, this institution owed its birth—though the inspiration came from St. Bel—and early nurture, not to a scientific, but to an agricultural body, *The Agricultural Society of Odiham ;* but it since received important stimuli to its progress in the shape of an annual Parliamentary grant of money, and by the granting, through the favour of the reigning monarch, George III., of the rank of commissioned officers to those veterinary surgeons who might be appointed to regiments.

So far as I know, no further imperial stimulus was given until the year

1844, when, owing to the strong representations of the leading men of the profession, its members were allowed to form themselves into a body corporate, which, by virtue of a charter granted by Her Majesty, was distinguished as "The Royal College of Veterinary Surgeons," the said college being empowered to examine students, and give diplomas to such as proved themselves qualified to practise the veterinary art. The said charter went, however, further than this; it declared that none but those who had obtained the diploma of the R.C.V.S. were entitled to call themselves *veterinary surgeons*. Unfortunately, as has been the case with many similar legal instruments, the latter benefit was rendered entirely nugatory by the unaccountable omission of any penal clause to the charter; and however much money and time the veterinary aspirant might spend, or however severe an examination he might pass, he found himself, practically, in a position, so far as the enjoyment of a distinctive title was concerned, not one whit better than the veriest quack. This culpable omission has been the spot on our sun, the rust on our armour, the clog to our onward progress in the past. Happily, it is now removed, and we can at least hope as we believe, that its removal will prove of inestimable value to the profession. More of this, however, anon.

As the commencement of the scholastic edifice was modest in its nature, so the scholastic course; a few short months comprised the period of study, at the close of which the student received what was practically a diploma of qualification; gradually the period of study was extended to two sessions of five months each, and collateral subjects—such as chemistry—were added to the curriculum. Within a comparatively short period, three other sessions—two summer and one winter—have been added to the course, which, at the present day, is as long and as important as was that of the medical profession a very few years ago.

Since the Charter of 1844, others have been obtained, by virtue of which the R.C.V.S. has been enabled to institute a higher degree than that of member—viz., the Fellowship—and to adopt other measures, having for their object the advancement of the profession.

The Council of the R.C.V.S., as provided for by the first Charter, was composed of a President, Vice-Presidents, and members—the latter being chosen in due course at a representative meeting held annually in London; consequently, they were practically the nominees of those members of the profession who possessed money and time sufficient to enable them to attend the annual meetings, and, as must always be the case, where the electoral body is limited and of one class, the elected represented only one phase of thought and action in the profession—members remaining on the board as antiquated fixtures, whose mental capacities became progressively narrowed with each year of their existence. This state of things has fortunately been remedied by a provision in one of our recent Charters, whereby the election of members is, with the exception of those present at the annual meeting, carried out by means of voting papers forwarded to every M.R.C.V.S., in every accessible part of the United Kingdom and its dependencies, thus ensuring a representative Council in the widest acceptation of the term. The effects of this change in the electoral department of the profession have been most marked and beneficial; new life has been infused into the old tree; the trammels of bigoted and narrow-minded customs have been cast aside, and vigorous action has taken the place of masterly inactivity. In the old Council progress was carefully guarded against, aspirations were suppressed, darkness reigned supreme, the vital stream flowed on, but sluggishly, and no advancement was made. As a body, its condition was similar to the kernel of a nut deprived of heat and moisture; life certainly was there, but activity

was dormant; a crust of indifference had been gradually formed around it, rendering it for awhile insensible to outside influences of a progressive nature. It required some revivifying influence; it received it, as is often the case, from an external source—from the great body of the profession itself—and once this influence was brought to bear upon it, sprouting and vigorous vegetation and fructification resulted. Looking back upon the profession, and considering what it was and what it is, the contrast seems scarcely credible. On the scholastic side—the number of sessions extended from one to five; the subjects taught and examined upon from three or four to upwards of a dozen; a matriculation examination, a higher degree—the Fellowship—were instituted. On the political side—the profession, compacted into one body, the Council, a representative one, composed of men elected by veterinary surgeons from every part of the kingdom and from each of the schools, and elevated by the Legislature into a powerful governing force. Socially, too, the advance has been great, and professionally it has been even greater, many honourable outlets for the exercise of our craft having developed themselves during the last few years. All these changes, it must be borne in mind, have been wrought by the profession itself. Small though it be as a body, it has been possessed of a large amount of inherently potential force; it has quietly thrust itself, as it were, into its appointed place, and that without the adventitious aid of large pecuniary grants, such as have been enjoyed by the other profession, and almost without the aid of friends at court. And as with the profession, so with the schools; all private ventures, all depending on their own efforts, one or two of them at least having but a very small and unencouraging beginning—in the case of our own school a class composed of one solitary student; yet all in a flourishing condition, and all working, I hope, to the attainment of one end, the general good of the body corporate. At the present moment *every* school, so far as I know, is self-supporting—a position, I imagine, which cannot be claimed by the scholastic institutions of any other profession.

Before quitting this part of my subject, it is only right that I should say, that while we have in general matters advanced much, we are in scientific matters still far behind. This is accounted for by the fact that, as a profession, we are poor, as teachers we are hard worked, and as investigators we are handicapped by the incubus of an Act which will, so long as it is in existence, put us, in comparison with our continental brethren, in the position of pigmies contrasted with giants, which will make us *not leaders, but followers.* Granted that there was at one time, and by a minority of experimenters, much abuse of vivisection, that experiments cruel in themselves were unnecessarily multiplied, and that many victims were sacrificed in a reckless and wanton manner, no arguments can justify the suppressive interference with such experiments as those recently carried on by our colleagues in France, and from which such glorious results have been obtained; neither can the suppression of experiments, having for their object the determination of the effects of medicines upon animals, be justified. We hear of the discovery of new symptoms of preventing and curing disease; we cannot adopt them, because we know nothing of them practically, and dare not have recourse to the natural means of making ourselves acquainted with them. It may be said that when we hear of the introduction of a new medicine into medical practice, we can easily utilize it into our own. I answer, We cannot, because we know nothing of its effects, or the doses in which it is requisite it should be administered to the different animals we are called upon to treat; whereas, if we were not hedged in by complex legal formalities, we could by a few experiments satisfactorily determine the point, and add largely to our store of weapons wherewith to fight our enemy—disease. As it is, every time we administer a new drug to a sick animal, we perform an experiment of the

very worst kind, because while we are trying to discover the dose our patient is losing ground which might have otherwise been conserved.

I have spoken of the great changes which have been wrought in our profession. Allow me to direct your attention for a short time to one great influence of the past in the bringing them about. The life-work of a man is not always—perhaps rarely—appreciated, or its value recognized in his own day; it requires the calm judgment of a discriminating posterity to place it in its proper position as an elevating force. Frequently, too, the outsider appreciates more forcibly—probably, because he looks at it from a different standpoint—the influence of the work of an individual than do those who have been directly associated with him. If it can be said of any man that he exercised an enormous influence in the development of a science or a profession, it may be safely so said of the late Professor Dick in connection with veterinary medicine.

Hitherto I have avoided saying much of my talented predecessor, the founder of the institution with which you, gentlemen, members of the Corporation of this ancient city, are so intimately connected, and over which I have the honour to preside. I have done so because, being personally unacquainted with him, I could form no estimate of the value of his work during his life. But recent events have enabled me to form a just conception of his character, and of its influence upon those he taught; and I am led to the conclusion that the one prominent feature of that character was *energy*, and that he possessed the power of infusing that energy into those who came under his tutorial care. Professor Dick has been called the "father of the veterinary profession in Scotland." He was not only the father, he was much more: he was the originator, the maker of it. Scotland before his day knew not the profession, and had he not lived it would probably have continued in ignorance of it for an indefinite period. Professor Dick did what few men succeed in doing: he created a demand, and for that demand he provided a supply; and as the one has since gone on increasing, so the other has kept pace with it, and may in the end surpass it. He was essentially *the* man (so far as our profession is concerned) of his day, but his influence has extended far beyond his day. He was the right man in the right place—a place, I venture to assert, which no other could have filled in his time, for few men possess the same indomitable will and few men would have fought on as he did, against many opposing forces. He found the ball at his foot; he set it rolling with so vigorous an impetus that it has continued to roll even to our time, and will still roll on in the generations to come.

I have said that the influence of Professor Dick extended far beyond his own day. It is more strongly felt in our time than his, and in no way more strongly than in the marked change in the parliament of our profession since the irruption of the northmen therein. The greater part of the advance which has been made, has been through the instrumentality of his *protegés*, and the final stroke—the recognition and protection of our profession, for the first time in its history by the legislature—was given by a Dick College graduate, our present president, aided by Professor Brown, of the London College, and the directors of the R.S.P.C.A., to each of whom we owe a lasting debt of gratitude. I repeat that Professor Dick's influence extended beyond his day; it will be felt in future generations, and they will benefit far more than we by the legislative Act of which I have spoken.

If the energetic and determined character of the professor has influenced his pupils in the direction indicated, it has none the less influenced them in a tutorial and professional sense.

England (except for a very brief period) has never had more than one teaching school; Scotland has at the present time three, and has had a

fourth. The only two Colonial schools in existence owe their origin and their present position to graduates of the Dick College.

I hope it will not be thought that I have been endeavouring to raise the graduates of one school at the expense of another; by so doing I should have lowered myself; in that which I have said I have had no such intention. I have only done justice to the memory of one whom personally I knew not (though I am happy to be able to claim him as a fellow-graduate of the same *alma mater*), but whose influence in the profession, and the honour due to his name, has been brought prominently to my notice by the events of the past few years.

Ladies and Gentlemen, I took, as it were, for my text, in the early part of this discourse, the aphorism that "in nature it is the fittest which survives." Veterinary medicine and surgery have lived and prospered because they were a great social necessity, and because their vitality was contained within themselves. Professor Dick made his mark, because the work which he accomplished was a necessary work, and was efficiently done. His one great work —that with which we are most intimately connected—I am happy in believing has not deteriorated since his time.

Though torn by contending factions, and rent by internal dissensions, though subjected to the active opposition of enemies and the passive opposition of lukewarm friends, it remains a great memorial to the genius of him who commenced its erection with one solitary votary; and I think is a grander memorial than anything which can be devised in the shape of stone or marble statue.

As the Royal Veterinary College of London was assisted in its early struggles by one exotic body, so the Royal Veterinary College of Edinburgh was fostered in its infancy and supported in its adolescence by another exotic body—the Highland and Agricultural Society of Scotland, to whom the best thanks of the profession and the stock-owning part of the public are due, and whose assistance was always greatly appreciated and gratefully acknowledged by the founder of this institution.

I must not leave this room without addressing one word of encouragement to those who are about to commence the study of veterinary medicine, and perhaps of encouragement also to those who have made some advance in it.

Gentlemen, I have shown you what has been done in the past, what is being done now. I have shown to you what the energy of one man is capable of accomplishing, not only in his present but in the distant future. I have impressed upon you the truth, that all that has been done has been wrought out at the expense of hard work and indomitable perseverance. I would tell you now, that only by work can you hope to accomplish anything good or great in the profession you have chosen, and it rests with you whether that work shall ennoble and advance the profession or shall degrade it. All work, we are told, is noble; assuredly it would be a great blessing if only for its healthy influence upon our minds; and no living person succeeded more perfectly in expounding this great truth than did the sorrowing widow of a great man (recently departed), when she wrote, "There is no healthy thought without labour, and thought makes the labour happy"; and again, "I need not be the shrinking slave of toil, but its regal master, making whatever I do yield me its best fruits."

Gentlemen, is for you to determine the nature of the fruits which your work shall bear; it is for you, it is for all of us, to decide whether your work shall deserve to survive, or whether it shall pass away without leaving one character engraven on the fingerpost of time, and without, in the slightest degree, influencing for good the future of the profession whose study you have chosen as your life's work. I ask you to follow the example of the

ancient Romans—so to fulfil your task here, that whatever you do in your life shall bear for ages to come the impress of utility and stability.

Bailie HALL proposed a vote of thanks to Principal Walley for his address, which was seconded by Emeritus Professor Balfour, and cordially awarded.

Councillor RUSSELL, in proposing a vote of thanks to the Chairman, said we were on the eve of very great discoveries indeed—perhaps they had been made already—which would prove the greatest blessing to the human race ; and those discoveries had had a foundation in veterinary practice. He had had occasion to look into veterinary books and compare the practice in olden times with the modern, and he thought the benefit animals derived from the change in practice was largely due to the instruction communicated in the colleges of recent date, and to the assimilation between the two kinds of professors of the healing art. He endorsed what the Principal had said about the restrictions imposed upon the experimenting upon animals, with the view of getting information for their own treatment and that of human beings. He could personally state that the Act had proved a great hindrance to experiments which were not of a painful nature. Certain experiments, for example, were being conducted by two members of the British Medical Association upon disinfectants. They experimented with vaccine lymph ; but although they were allowed by law to vaccinate babies, they were not allowed to vaccinate calves, and consequently their experiments had to be stopped, and they had to lose a whole summer and get a licence from the Home Secretary to vaccinate a calf. (Laughter.)

The meeting then separated.

GLASGOW VETERINARY COLLEGE.

THE Introductory Lecture to the winter session of Glasgow Veterinary College was delivered on October 26th by Dr. Young, Professor of Natural History, University of Glasgow. Principal McCall occupied the chair; and in addition to a large number of students, the following gentlemen among others were present :—F. W. Clarke, Esq., LL.D., Sheriff-Principal of Lanarkshire ; Professor Cleland, and Professor McKendrick, Glasgow University ; Dr. Moore, Blantyre ; Rev. David Brown, St. Enoch's Church, Glasgow ; Professors Knox, Cooke, McConnell, and Macqueen, Glasgow Veterinary College. The following veterinary surgeons were also present :—Mr. Dunlop, Belfast ; Mr. MacIntosh, Dumfries ; Mr. Thomas Campbell, Kirkcudbright ; Mr. Lindsay, Alloa ; Mr. R. Rutherford, Edinburgh ; Mr. McFarlane, Greenock ; Mr. Pottie, Paisley ; Mr. Houston, Paisley ; Mr. J. McAll, Govan ; Mr. Weir, Airdrie ; Mr. Weir, Glasgow ; Mr. Blackie, Bellshill ; Mr. Bryce, Stirling ; Mr. Brackenridge, Holytown ; Mr. Gardner, Helensburgh ; Mr. Neil, Dumbarton ; Mr. Prentice, Glasgow ; Mr. Mitchell, Cranstonhill ; Mr. Pollock, Parkhead ; Mr. Mitchell, Glasgow ; Mr. J. P. Macqueen, Glasgow ; Mr. Wm. Anderson, jun., Glasgow ; Mr. Currie, Glasgow ; Mr. Wyper, Glasgow ; Mr. Blue, Mearns ; Mr. Panton, Blairgowrie ; Mr. Constable, Inchture ; Mr. George Hill, Glasgow ; Mr. Peddie, Cathcart.

Dr. Young's address was as follows :—When I accepted Principal McCall's invitation to address you to-day, on the opening of a new session of the Glasgow Veterinary College, I did so, because the opportunity was offered me at once of testifying my interest in the success of the institution, and of giving fresh evidence in favour of the unity of the medical profession, whether the practitioner has to deal with animals or with man.

Gentlemen, you are at various stages of those studies which, in their lowest aspect, will fit you to earn a living, and in their highest will enable you to

benefit mankind by diminishing the evils with which they have to contend. If in former periods the "healing art" was the object of popular sympathy, it is "preventive medicine" which commends itself to the man of science, even more than to the philanthropist. The alleviation of suffering is that which engrosses the attention of the kind-hearted, but it is a higher form of benevolence which fixes its thoughts on the prevention of that suffering, and finds, in the process of alleviation, only the material for investigating the evil to be combated. A recent writer, himself a member of the medical profession, waxes eloquent over the generous disinterested zeal of doctors, who testify in no niggard way their admiration for a man whose lifework it is to devise means of disarming disease. The generous feeling is doubtless there, but it is tempered by the knowledge that the evil successfully combated has its place taken by another formerly in abeyance. Dr. Pangloss, in Voltaire's immortal romance, declared it the best of all possible worlds when he was robbed and maltreated by the Turks; and still held to his creed when, having escaped from their hands, he endured still worse suffering as the consequence of undue devotion to sensuous gratification. The evil he had escaped was to him replaced by another, and the sum of happiness and misery was thus kept in a state of equilibrium.

But if it is impossible to anticipate, even from the highest triumphs of preventive medicines the removal of disease from the world, it is possible to count on the protection of men and animals from general, widespread calamities, and to anticipate the time when men and animals alike will suffer only from individual ailments. The curse of the Middle Ages was the epidemics which from time to time decimated and demoralised provinces. We still suffer from our inheritance: we have outgrown some, at least, of the faulty conditions imposed on man by a civilisation more rapid than the progress of science, but we now live under reversed conditions, for the science of to-day is in advance of its practical application. You, gentlemen, are on the threshold of the profession at a critical time. We seem to have, almost within our grasp, the means of averting the Scarlet Fever, Measles, Smallpox, the Carbuncle, the Splenic Fever, and the many diseases which annually spread grief and ruin. Time would not suffice were I to attempt even a mere outline sketch of this great field of medical enterprise; but I may, with fair hope of success, try to lay before you the reasons drawn from recent medical research for asserting the unity of the profession, and for urging that the scientific truth should be converted into a practical one by the closer union, if not the amalgamation, of the schools of human and veterinary medicine. I have a further object in view—to point out, namely, the extent to which recent experiments, even when manifestly successful, have established a sound method of treatment, but have still left open for you an abundant field for study and experiment.

Historically, the oldest point of contact between human and veterinary medicine is Smallpox, limiting the phrase to scientific contact. For there are older *rapprochements* which rest on popular notions only, and these were as erroneous as, in some cases, they were brutal.

I need not go over the history of vaccination; for all know that it was discovered that vaccination from the pock developed in the cow protected the human subject from the disease Smallpox. You also know that recent inquiries have demonstrated the imperfection of the current Vaccinia as a protective against Smallpox; that Erysipelas and other signs of blood-poisoning have followed, in many cases, the use of the ordinary vaccine matter. In Dr. Cameron's paper, in a number of the *Fortnightly Review* for 1881, you will find satisfactory proof that the value of the current matter as a protective has undergone a depreciation capable of accurate estimation by the statistical method. He shows that the protective influence of

vaccination has steadily gone down, and that the only means of counteracting its declension has been the repetition of the operation in individual cases. By a series of experiments carried on, I grieve to say, at the cost of men, it is now made clear that the transmission of vaccine matter through men is unsatisfactory, prepares for a mortality not anticipated by members of the medical profession, who, as a body, are singularly ill-informed in this matter.

The theory of vaccination is, that if a substance developed as a morbid product in a heifer is introduced into the tissues of man, a series of pathological changes takes place in man which runs a definite cause, the poison being finally eliminated from the system, which is left free of any material whereon the same poison can work: this freedom lasting for a term of years. It has been proved that the Vaccinia or introduced poison works not by means of its fluid portion, but by means of certain solid particles therein suspended, and which may be got rid of by the method of subsidence; that is, they may be got to settle down, leaving a clear supernatant fluid, which is innocuous. For this character of the poison or contagium, the objectionable term, particulate, is employed. The Smallpox or Variola and the Vaccinia are distinct, both in the kind and gravity of the symptoms they present, and it is not yet certain whether they are identical diseases, or only similar in the character of the substances on which they act within the body. Be that as it may, the fact remains that two things are necessary—a poison introduced from without, and a substance which that poison acts upon. It would appear that every human being is born with, or at least early acquires a stock of material on which Smallpox or Vaccinia will act, and it seems probable that every one after a time may reacquire this stock, rendering revaccination necessary, and in most cases the repeated operation succeeds. But if revaccination is not practised, and if the person catches the contagion of Smallpox, the reacquired stock differs from the primary or congenital stock, somehow or another, for the Smallpox is modified, is not as a rule so severe. It appears that if the lymph, or fluid containing this poison taken from vesicles, has passed through numbers of human beings, it is humanised to such an extent that it fails to produce, when introduced into the calf, the true Vaccinia; it has lost its power. To this I attach much importance, as bearing on a question to be afterwards discussed regarding the true character of the poison particles. Dr. Thiele obtained a good Vaccinia by inoculating the cow with Smallpox virus, and asserted that he had got an equally good Vaccinia without the cow at all, but simply by diluting the variolous poison with milk. If this is so, there would be strong reason for believing in the identity of the milder and the severer form of eruptive Fever, characterised by the development on all the surfaces of a vesicular eruption. But though man and the cow have thus a disease in common, it does not follow that the same disease exists in other animals. Indeed, it appears as if it does not exist; for Sheep-pox, though so like, does not seem mutually transmissible. The liability of other animals to similar diseases is not yet fully investigated, and in this domain, you have before you abundant opportunities for study. From observation and experiment it is hard to say what results may not follow; and if nothing else is gained, you may at least have the opportunity of recording differences of pathological action.

The results of vaccination in a disease so easily transmissible as Smallpox, and so apt to assume the epidemic character, could not fail to suggest this possibility of similar treatment for other epidemic diseases. But though the idea has vaguely floated in the minds of medical men, it is only of late that it has taken practical shape. I must refer you to a very copious literature for the details of the progress of this line of inquiry, the last clear statement of the main lines of the history being given by Dr. Cameron in

his presidential address to the Health Section of the Dublin Social Science Congress this year. It is sufficient for my purpose to take a few cases, but I must urge on your attention, the fact that the greatest strides taken by preventive medicine have started from the study of diseases with which it will, in the future, be your special duty, as veterinary practitioners, to deal.

A very terrible disease, Anthrax or Malignant Pustule, the *Charbon symptomatique* or *la maladie de Chabert*, has been productive of serious loss to the agriculturist. Here let me interject the remark that the loss of the breeder is bad enough in itself, meaning, as it does, the paralysis of a great industry and the impoverishment of an important section of the community, but it also means peril to the mass of the people. Epidemic diseases do not burst suddenly into existence ; there is a period of incubation in each individual, and there is for the animals of an infected district a period of gradual development, during which the full meaning of the spreading ailment is uncertain. During this period the community continues to get milk and flesh meat from the agriculturist, and runs a chance of infection from the secretions and tissues of the diseased animals. It is an open question to what extent such food is a source of danger, to what extent cooking obviates the risk. The evidence is contradictory, but this very circumstance increases the importance of our thoroughly investigating every point in the history of a disease. When, therefore, I urge the duty of protecting the agriculturist, it is not merely on commercial grounds, but also in the interests of the health of the people. Human and veterinary medicine here overlap in such as fashion, as to make the existing separation between the students of these two branches of one great art more preposterous than it has ever been.

Now this *Charbon symptomatique* has been brought within the domain of preventible diseases by the work of MM. Arloing, Cornevin, and Thomas, veterinary surgeons at Lyons. They made careful experiments on animals, and demonstrated that the poison of this disease can be "vaccinated"—*i.e.*, can be introduced in small quantities into the blood, with the result of working up the second factor, so as to give the animal immunity from graver infection. This important—nationally important—result has been, by the French Government, put to the practical test, and the laboratory experiments of the gentlemen referred to will find their reward in the increase of wealth of the community, not to speak of the suffering annually saved to hosts of our domestic animals whose condition is, so far as disease is concerned, aggravated by the fact of their domestication.

But these results are only an outcome of the researches initiated by Pasteur, who has reduced prophylactic medicine almost to an exact science. If Helmholz, a surgeon, was the first to demonstrate that the solid bodies in a fermenting fluid were the causes of the change, and, by filtering the fermenting substance, to prove that the fluid part had no effect, thus supporting La Tour's great discovery of the potency of the yeast germs, a chemist has deeply repaid the surgeon's contribution to chemistry by opening up new fields of medical research. Pasteur was a chemist, but with the insight of true genius, he was able to grasp the essential points in the physiological problems accidentally brought under his notice in the course of investigations entrusted to him, in the belief that they were essentially chemical questions. It happened to him to investigate the Splenic Fever of cattle, and he has revealed the extraordinary and unexpected relations in which that disease stands to a very varied set of phenomena. It had been known for years that in the blood of animals affected by Splenic Fever, a schizomycetous fungus, commonly known as *Bacillus anthracis*, was found, and it was believed that this lowly organism was the cause of the disease. Pasteur, putting various facts together, showed that the disease was spread not merely from beast to beast, but was actually nursed by the very means taken to stamp

it out. The carcases of the victims were buried, and the worms were the agents which brought the poison to the surface, whence, by the rank grass growing over the graves, it was retransmitted to the occupants of the field, the infective agents being assumed to be the *bacilli* above mentioned. He experimentally demonstrated the fact by feeding cattle over the grave of their predecessors, and, finally, after many experiments, cultivating the germs in organic fluids, such as meat juice, he obtained a fluid containing the particulate contagium. With this he vaccinated animals, proved that he could convey the most malignant form of the disease, or a greatly modified form which, so far from being fatal, affected to a comparatively slight extent, the health of the animal yet left it safe even when the blood of animals dying from the worst forms of the disease was injected into their tissues. Confident in the results of his experiments, he boldly put his opinion to the severest possible test, and publicly inoculating animals, some of whom he had, others he had not prepared, foretold the results in each set of cases. It is the most striking result of his well-devised experiments that Splenic Fever is now, under authority and at the cost of the French Government, treated as is Smallpox in Britain—warded off by a comparatively harmless vaccination.

A similar story may be told of the Fowl Cholera, for which Toussaint successfully vaccinated, using the *bacillus* found associated with the disease and cultivating it in various ways. Pasteur improved upon Toussaint's process, and communicated the disease in a mild form, which, however, was completely protective even against the crude poison got from fatal cases.

The Pig-plague was likewise shown by Klein to be communicable, he having cultivated the germs and used them for inoculation.

I need not go over all the diseases to which this mode of treatment has been applied, or is in course of application. All that I wish to point out, *hoc statu*, is that, First, that these diseases of the lower animals seem to depend for their virulence on solid particles; Second, that, as Pasteur has the exclusive merit of showing, the virulence can be abated without altering the character of the process, so as to impair the protective influence of the vaccination.

All these results have been gained by experiments on animals, and not one of them could have been foreseen by any process of reasoning, nor inferred even from the most carefully observed facts submitted by the chance of veterinary practice.

One disease, however, I must refer to before passing to the human affections to which parallel treatment may yet be found applicable.

Hydrophobia is a fever which runs a definite course when the period of incubation is ended. Pasteur is at present endeavouring to ascertain if the germ-bearing saliva may be utilised, as in the blood of Fowl Cholera, for purposes of vaccination, and thus to extend the practice instituted by M. Galtier, a veterinary surgeon of Lyons, of introducing for protective purposes, the saliva of Rabies into the veins of sheep and goats. This series of experiments is not yet complete, but there is reason to hope that that awful disease may yet be brought under control.

Now, the diseases of man to which it is desirable that similar treatment should be applied are Scarlatina, Measles, Diphtheria, Typhus and Typhoid Fevers, Relapsing Fever, and Malarial Fevers.

It is right, however, that I should mention one case in which science has more than justified a popular prejudice. It is a common notion that Consumption is infectious, and there is consequently an objection to a healthy and a consumptive person occupying the same room. It has been proved that tuberculous matter may be introduced into the bodies of animals, who thereafter are found to suffer from the development of tubercle in various

organs. Dr. Alfred Carpenter, in 1880, denounced the sale of the products or of the flesh of tuberculous cattle; and at Dublin, Dr. Cameron emphatically renewed the warning, which was afterwards taken up and emphasized by the press. Inflammations in the course of these local tuberculous lesions have been found to yield microphytes, and what is essentially a disease of malnutrition seems to be claimed as a germ disease.

We have evidence, obtained by rigid experiment, of the transmissibility of diseases, even of some whose danger was not suspected and could not have been demonstrated save by experiments on living animals. We have, further, evidence furnished by careful experiments that certain diseases may have their virulence diminished, and their danger as epidemics averted by vaccination, analogous in its character to that which gives protection against Smallpox. No one can doubt that the domain of preventive medicine has thus been vastly extended; nor can it be foretold, till actual trial has been made, what other diseases are not under control. There is a vast field for experimental observation before you; and, if you enter on that field you have the satisfaction of knowing that the work of your predecessors has minimised the "blind trials" unavoidable in the earlier stages of all inquiries. The main lines of the investigation have been determined, and you have the satisfaction of knowing that unnecessary suffering is obviated and time importantly saved.

In the majority of cases the contagium seems to be particulate. What are the particles? are they vegetable germs? or are they particles of organic matter which either exercise a catalytic action on animal fluids, or multiply by so disturbing the balance of the blood as to give rise to a number of similar bodies? The difficulties of determination are illustrated by the fact that some have thought Klein's vaccine particles to be inflammation products. In other cases the contagion seems non-particulate, and, if Toussaint's experiments in the case of Fowl Cholera (retracted by himself for hypothetical reasons which reconciled his results with the germ theory) are confirmed, it appears as if a non-particulate fluid could afford protection against a disease usually treated as particulate in its contagium. Hydrophobia seems a parallel case, as I shall afterwards point out.

While, then, there seems no doubt as to the existence of morphological contagia, there seems good reasons for believing that other contagia are non-morphological.

The early history of the germ theory was that of a struggle between the advocates of spontaneous generation, and the upholders of the doctrine that all organisms are the descendants of progenitors. The latter class of writers had frequent difficulty in explaining phenomena without an appeal to the former hypothesis, and we find Burdon Sanderson in such a strait, suggesting that bacteria may be the carriers of infection, yet be utterly incapable of originating the infection which they convey (*Med. Chir. Trans.* 1873, p. 354). Bastian naturally asked why one set of particles should require the hypothetical aid of another set of particles to carry them? Tyndall has denied Sanderson's view, but Sanderson has not himself withdrawn it. We shall find afterwards that in essence this suggestion has some ground, and that, on the one hand, the bacteria are credited with the possession of some peculiar content of the ferment order, which, and not the organism, promotes change; on the other, they are recognised as carrying along with them substances of high potence, to which they are entirely subordinate. This latter theory assumes, as Dr. Cunningham has well argued, that the constant association of bacteria with certain diseases is an argument against the bacterial influence, but strong proof in favour of the common character of the changes which at certain stages encourage bacterial development. Of heterogenesis or spontaneous generation, it is now unnecessary to speak.

The controversy is at rest, not because the parties are convinced, but because the advocates of the spontaneous origin of living things have had their arguments and experiments practically refuted, the margin of possible error in the facts thus adduced being too narrow to base on it any rational hope of success.

As the evidence against heterogenesis accumulated, the presumption in favour of the existence of atmospheric germs was extended to the causation of disease, until it seemed as if the germs were, *in se et per se*, capable of producing any given disease, the climax being reached in the statement that the Smallpox germ produces Smallpox, the Splenic Fever germ Splenic Fever. The strange confusion which, in spite (of at least, the uncertainty of) the botanical evidence, thought the specificity of bacteria indisputable; the curious reasoning in a circle which held that, because poisons were specific, the germs supposed to be therewith associated must be also specific, and the converse, will furnish to the future historian of pathology a puzzling study. But the leaders of the new school, always, as is usual, outstripped by their disciples, have for some time recognised that germs alone could not be held as the exclusive factors, and we consequently find that Lister, the ablest of our English inquirers, some time ago recognised the importance of a second factor. In showing the different phenomena which were associated with the same bacteria under different conditions, he showed the power of the second factor, the soil. Now it seems as if the admission herein implied were likely to go farther; for as the specific difference of bacteria is denied by some of those most competent to decide on such a question, and as the evidence in favour of such specific differences is on all hands admitted to be so delicate as to require the skill and experience at the command of but few observers, the importance of the second factor becomes proportionately greater. There is the alternative already referred to, not acceptable to the advocates of the germ theory, namely, that the germs are infection carriers; but even this obviously does not help to get rid of the second factor.

Among the current statements is one to the effect that germs are found within the body. Lister, and after him Tyndall, have shown that the deepest air in the lungs, *i.e.* air expelled by the most forcible expiration, contains no floating particles, and Lister thus accounts for the absence of bacterial symptoms in cases when fractured ribs have punctured the lungs, and thus let air into the pleura. By these experiments the germs do not get into the body through the lungs, do not get in directly from the air; howsoever they get in, they do not set up mischief in ordinary circumstances. So far as Listerism, or the theory of our modern antiseptic surgery (in plain English, cleanly surgery) is concerned, the only active germs are those which attach themselves directly from the air to the wounded exterior of the body. The latter seem, therefore, to be credited with vitality; the former seem to be admitted, *sub silentio*, as negative in their influence. To this I attach much importance. But, as certain germs are assumed to have travelled extensively through the body before they appear, as in Typhoid Fever, at the intestinal closed follicles, there is both suspended vitality and an extraordinary selectiveness attributed to bodies whose chemical composition, systematic position, and even individual characters are still among the unsettled questions of biology. But it has been denied that germs exist in normal blood, the rounded bodies called micrococci being due to the disintegration of white corpuscles, the same bodies, be it remembered, which are undoubted spores in disease. Taking into consideration the negative results as to the decomposition of fluids obtained by Pasteur and others, I will accept as a truism of which he did not see the full force, Koch's italicised statement, "I have come to the conclusion that bacteria do not occur in the blood, nor in the tissues of the

healthy living body either in man or of the lower animals." The word *healthy* is the important word, and I may have hereafter to refer to this final judgment, which implies the possibility of germs entering an unhealthy body in some fashion which does not find its equivalent in health. The fact is the theory of diseased processes under the influence of germs based on experiments which, dealing with fluids in glass tubes, can properly have no analogue in the living body, except in cases of traumatic infective disease.

The soil, then, on which the germs are planted, or the second factor, to use Maclagan's phrase, is, I repeat, at least co-ordinate with the bacteria to which specific properties are credited. It is known that dilution of a poison weakens its virulence (though in some cases contradictory experiences appear to have been realised), and to this dilution is attributed the fact that some people suffer at once, others not till after an interval, others again escape wholly. Whether there is, 1, real dilution, *i.e.* mixture of air uniformly with the contagium, or, 2, patchy distribution, as in the bacterial clouds which Tyndall imagines, or, 3, partial destruction by oxidation, is immaterial ; the fact is, that the incidence of the disease is unequal, and that the escape of some points directly to the absence in them of the second factor. The history of every epidemic abounds in such cases, and the very theory of vaccination rests on the production artificially of that condition which it is not illegitimate to assume as actually existing. Were it otherwise it would be impossible to understand how any one should escape. Indeed the advocates of the germ theory—I do not mean the leaders, but the rank and file—have overproved their case, and denied to the tissues of the body the power of originating tissue change, without the stimulus of foreign organisms. Thus Burdon Sanderson assigns the inflammation which follows the subcutaneous injection of ammonia to the bacteria with which the advancing inflammatory ring is crowded. It would be logical, under these circumstances, to say that the gotalus poison, the result of tissue change, is due to the presence of bacteria which are found in the mouths of snakes as of other animals.

It is incorrect, moreover, to assume bacteria as the sole factors in the infarction of inflamed parts ; the altered density of the blood counts for something ; the disintegration under heat of colourless corpuscles yields the zoöglœa masses on which Koch rests so much, while the broken-down red corpuscles are the source of the micrococci, which do mischief when bacteria do not put in an appearance.

The analogy of beer fermentation has been invoked as explaining why one small portion of contagium, little more than a particle, may originate, and rapidly, a large mass of morbid and morbific matter ; and it is claimed that nothing short of fungi multiplication offers a parallel case. But two cases may be cited, neither of which can be explained by fungus action, the one case outside, the other inside the body. Dr. Lyon Playfair drew attention to the decomposition of oxamyde, a case in which a minute quantity of acid suffices to reduce a large quantity of the substance. The ammonia which neutralises the acid liberates oxalic acid, and so on, till the whole is converted into ammonia and oxalic acid. The other case is within the body. The poison of snake-bite, say of cobra or crosalus, kills in a very brief period, the disorganisation of the blood being as thorough as it is rapid. No one has asserted the poison to be particulate, and there is, as I shall show afterwards, good reason for believing it to be a pure ferment. The preparedness then of the subject for this contagium has to be kept steadily in view. Wherein it consists, it is difficult to say, any more than it is possible to say what is the physical condition of the blood on which the poison operates. But it is certain that no contagium, save that of venomous animals, acts without a considerable period of incubation approximately fixed at a maximum of three weeks.

Contrary to what might be expected, it is said that contagium diminishes as the bacteria increase, *i.e.*, as decomposition advances. Baxter notes the destruction of the specific virus of Smallpox by putrefactive change, and Klein says the microphytes of Enteric Fever are most abundant when the necrotic changes are most advanced; while Jaillard and Laplat, in 1864, showed that Splenic Fever blood was the more virulent the fewer the bacteridea. Detmers, by successive filtrations, got rid of the microphytes, and held them innocent of the fluid proof of this particulate nature of the germ. But as his prolonged filtrations were done in air, he had in fact oxidised the poison, and gives the proof when he says he failed in winter, which he seeks to account for, supposing he had not got rid of the micrococci. In some cases this has been ingeniously met by a distinction between bacteria and their germs or spores; as if, like parasites, the spores could not be infective unless introduced into another organism. But this transference is actually done in the experiments which have proved the decadence. This is an instance in which experiments outside the body give erroneous impressions.

When the death of the germs by pure oxygen under pressure was referred to by Bert, Pasteur said that the bacilli were, on contact with the oxygen, converted into spores (*corpuscles-germes*), a remarkable transformation of curious botanical significance.

Grauitz, on the other hand, asserted that innocent microphytes may be made virulent by cultivation. It is difficult to understand this, save on the hypothesis that the disintegrating action of microphytes on organic fluids creates substance in these fluids which, inoculated with the microphytes, give rise to septicæmia; and my reason for making this suggestion is that a perusal of many narratives of experiments leaves a doubt on my mind whether specific diseases have been with sufficient care disentangled from septic disease.* It has been proved that the bacillus contagium has been made virulent by being transmitted through young guinea-pigs, and as this kind of observation has been so frequently repeated as to be now a safe, as well as a probable acquisition, I claim it as an argument against the microphytal character of the disease conveyed. The value of a young animal as a multiplier of virulent power lies in the fact that the fluids of a young animal are more highly corpusculate than those of an older, that there is a more vigorous tissue change going which multiplies the virus without any reason existing for the belief that the microphyte displays unusual vitality. The rapidity of the cell changes that take place, and the multitude of corpuscles liberated, are the physiological phenomena misunderstood when *bacterial* infection is said to be intensified by aid of young animals.

When, on the contrary, virulence is said to be diminished by cultivation in milk, or an organic infusion, animal or vegetable, there is here clearly a dilution of the virus, for the "germs" are not asserted to multiply with the same speed in these artificial fluids as in their proper soil, which is the blood of a living animal.

I have insisted throughout on the necessity for the existence of a "second factor" in every case of disease, on a preparedness of the blood of the patient. I have elsewhere had occasion to urge this in the case of Typhoid Fever, and what I then urged with a view to prevent a blunder in hygienic theory on the part of our health authorities, I now repeat on scientific grounds. I some years ago insisted on Influenza being a phase of Typhoid

* Pathologists or physicians have not been always associated with the experimentalists. I am the last to claim this line of research as the exclusive property of the biologist or medical man, but the physician's eye and experience are, unless guided by preconception, of importance in translating morbid phenomena into a commonly understood language.

when it occurs epidemically, and Dr. Henderson, of Helensburgh, has not made himself popular by setting forth something of the same opinion. My contention was that the poison of Typhoid, whencesoever derived, had no power unless the patient was prepared; and I illustrated this thesis by the analogy of the Seidlitz powder. If the two ingredients are dry, effervescence is brisk; if one is damp, it is less so, and if the acid has been thoroughly wetted for some time, little evidence of the combination may be obtained. In like fashion you may have every gradation from a Typhoid fatal in a fortnight to a lingering Influenza with a diarrhœa, oddly enough occurring in its course and not perhaps got rid of, at least not recovered from for four or five weeks. If this germ theory is to be dominant, though it is after all an hypothesis, then sanitary precautions are apt to be relaxed; air-borne germs are a kind of providential dispensation; the milkman is a convenient scapegoat. Amateur legislators, with enough law to blunder in a not easily corrected fashion, hunt down the vendors of a fatty fluid, and filthy overcrowded houses are restored with their occupants to the tender mercies of the Casbys, whom Dickens describes in "Little Doritt," who are always provided with a convenient Paucks to grind the people and minimise the expenditure on their houses, and whom the authorities find it (we ratepayers fail to understand how) so difficult to compel to realise their responsibilities.

The reasons for insisting on the vast importance of the second factor are:—

1. That not all persons suffer from communicable disease.
2. That epidemics terminate when they have exhausted the number of the prepared.
3. That similarly the disease terminates in the individual when the material on which its contagium operates is exhausted.
4. That vaccination now and again discovers insusceptible individuals.
5. That in the diseases of infancy exceptional cases occur in which one disease seems in its operation to create, or at least leave ready the pabulum on which another works.
6. That all diseases of a contagious or infectious nature are not equally transmissible to all kinds of animals or to all animals of one group—Splenic Fever and Glanders being noteworthy cases.
7. That innocent germs exist indistinguishable from the so-called virulent forms and sometimes in the same individual, while the same microphytes are found (Liesering, 1860) in Pig Typhoid and in Splenic Fever.
8. That, according to Tyndall in his test tube experiments, there is no reason why air germs should be moistened by the fluids on which they alight, unless there is an affinity between their contents and the fluid with which they have come in contact.
9. That according to Tyndall the "preparedness of the germs" accounts for the varieties of the "protean Typhoid Fever" (Murchison), explained by ordinary observers as due to a difference in the source of infection, Tyndall's explanation implying that all the "germs" in a contagium are at the same stage of development.
10. That predisposition has been experimentally shown to be needed, as when Pasteur cooled his fowls with cold water before he could secure their inoculation.
11. That Lister, when he admits that the fluids of wounds may modify the power of germs to cause injurious changes, practically admits the secondary position of the germs relatively to the fluids of their host.

I do not put forward these reasons for controversial purposes only; I urge them because they underlie a big question of public duty. If disease depends only on floating contagium, we may hold our hands, and, with one fixed on the grudging ratepayer, the other on that powerful municipal factor, the

house-owner and his agent, say with convenient fatalism, it is the Lord's will. But if you need two things to make a case of disease, a contagium and a substance in a man's body on which the contagium may work, their sanitary science (which is not yet a science, only a very accidental art), or, in safer phrase, preventive medicine, has a heavy piece of work before it—to use every means of avoiding that preparedness on the part of the public which I conceive to be half the battle in an epidemic.

I have not yet referred to the germs in their systematic relations. Are they microphytes? Crichton, I have already said, thinks that the reagents used in microscopy have to do with the development of phenomena which simulate vitality. Dr. Acland has drawn my attention to experiments which show that increased warmth, increased above blood heat, causes alteration of the blood corpulses which yield appearances very similar to those claimed as proofs of the microphytal origin of disease. The breaking up of the red corpuscles so as to yield refracting bodies indistinguishable from micrococci, the solution of the outer layers of colourless corpuscles so that their granular contents, held together by the protoplasm of the corpuscle, present all the appearances of what are called the zoöglœa form by some writers, the elongation of red corpuscles under the cover glass as drying advances and pressure increases, till at least a bacillus-like object is under the eye; all these are mere suggestions of the difficulties attending the solution of this germ problem. On a question of such extreme difficulty as the determination of objects requiring the highest power of the microscope, it is above all things necessary that competent observers should be in agreement, and that conjecture should be reduced to a minimum. Yet an ardent, but not overwise admirer of Cohn and the germ theory, says Cohn is 'the only person who would recognise the difference of the germs. The unconscious satire of this is a sad comment on the lack of the true scientific spirit in which so important a problem should be discussed. On the other hand, observers are found calmly asserting the presence of micrococci and their specific characters in the intestinal contents of mammals. Microscopists of experience and caution may be pardoned if they decline to enter the list with observers so omniscient and infallible. After wading through a tolerably extensive literature, I confess that I have not got anything definite and free from doubt. It is easy to say, as has been said to me and others, that the whole thing is beset with difficulties. If a foxhunter is lost in a mist, he does not gallop straight ahead, with the chance of jumping into a quarry : he casts about till he hits on some clue, and if none avails he is content to await the light. Is the reputation of any man so important when set against the good of the race, that we must accept his crude hypotheses, and thereon build a pile of new, doubtful, and probably false pathology? When, therefore, Pasteur says, as the *British Medical Journal* declares he said, that every one must be wrong who doubts the specific properties of germs, when one finds that the germs themselves are open to doubt, that the properties assigned to these are unproved, and that even the specificity of their effects is capable of another than the ordinary "vitalistic" explanation, one feels that the current theory is about its maximum of sway, and that in a year or two more scientific methods will have a chance of guiding your studies without your caution being called ignorance, and your desire for evidence treated as a proof of imbecility. The germ mania is, like some other evolutional manias, one from which the healthy, common sense of naturalists will speedily resile.

It is not easy, within the compass of an address such as this, to gather together the contradictory evidence as to the so-called germs. The so-called microphytes are—1st, Micrococci ; 2nd, Spores ; 3rd, Bacteria ; 4th, Bacilli ; 5th, Vibriones. Under each of these five heads we are told that we have innocent, septic, and specific forms. The recognition of these varieties is effected

by a circular reasoning to this effect : a certain disease has certain symptoms : in the blood or other fluids of the patient you have a microphyte : if inoculation with the fluid containing these microphytes gives rise to the same symptoms, the microphytes have done it.

But another fallacy has been appealed to. It is said that if a certain treatment is successful, the thing treated must necessarily have been of microphytal origin. Salicylate of soda is successful in the treatment of acute rheumatism, and, behold, acute rhematism is a bacterial disease ! Do the people who thus talk pretend to omniscience ? In the first place, do they know for certain the lactic and uric formations which go on in the body as the normal results of abnormal cell chemistry ? Is the relation of urea to uric acid one wholly dependent on the intervention of vegetable germs ? Do they remember that salicylate of soda, like all other germicides, acts by lowering the energy of all corpusculated fluids ?

If few bodies are free of such germs, how is disease of the rheumatic or gouty character (for the two cannot be pathologically separated) not universal ? To the advocates of a dogmatic assertion regarding the character of rheumatic or gouty disease, it would be vain to recall the fact that salicylate of soda has been proved experimentally not to destroy the vaccine virus, and they might deem it uncalled-for curiosity if one asked whether rheumatic fever had been produced by inoculation. It may be said by some man of science, anxious to help his medical friends out of their logical scrape, Perhaps each kind of germ requires its own antidote. Now has any one shown the germs of acute rheumatism to be susceptible to the influence of the drug ? Has any one explained why the drug is not successful in all cases of acute rheumatism ? Has any one even shown that there is a distinctive microphyte in that disease ? A therapeutic inference such as this suggests in very strong terms that physicians have forgotten, if they ever knew, the complicated character of tissue-change, and have ignored the fact that a chemical substance which alters the composition of the blood must necessarily alter the composition of the tissue reaction to which this altered blood contributes.

It is the fashion to ridicule Liebig's theory of pathological fermentation, and on *a priori* grounds to call in question the possibility of particles of organic matter so disturbing the equilibrium of organic fluids with which they come in contact that, without themselves multiplying, they give rise to the multiplication of similar bodies. The experimental inoculation of Tubercle has shown that if cheesy matter is introduced into an animal's body, Tuberculosis may be developed. I hope no one has seriously put Tuberculosis among germ diseases, microphytal diseases ! I cannot at any rate find any where a diagnosis of the germs which give rise to this disease of malnutrition. If such microphytes have been demonstrated, if their potence has been experimentally placed beyond doubt, then the warnings against the use of the milk of tuberculous cows are almost unnecessary; there is less danger from the milk than from other noxious influences. But nothing of the kind has been demonstrated, and nothing has been proved against the possible catalytic action of which, I take it, artificial septicæmia is the experimental proof. The distribution of such poison is a difficulty to which I ask your attention, because it is a very serious one. On the one hand you have a notion that microphytes cause Typhoid Fever : on the other hand that microphytes are a consequence of that blood dyscrasis which the Typhoid poison originates. Sewer gas has been put out of court as the first factor ; it has been wholly neglected as the cause of the second factor. What is the first factor ? Even in Glasgow I think we do not hear that the effluvia of Typhoid evacuations do much to spread the disease ; they have done nothing in that direction in the fever hospital. But the inspection of dairies satisfied popular excitement by trading on this disproved notion, and amid all the cackle for supervision of

the milk trade, no voice has been raised for the compulsory inspection of every farm in the country, just as every house in a town is liable to inspection. Foul matters in the water used for dairy purposes do, with the aid of milk, just that, and no more, which foul water does without milk—originate Typhoid. The difficulty as to the life of Typhoid germs in water applies to them whether the germs are microphytes or albuminous products of waste cast off from the ulcerated closed follicles. There is no evidence on either side of this question, and you have here a wide field for experimental research, both of the chemical and pathological kind. I may, however, indicate one or two phenomena which illustrate the line of research I suggest. The blood of Splenic Fever, dried with its bacilli, is after a lapse of time still virulent. The bacilli are said to be the virulent factor, but as I have already indicated, the associated organic matter has equal claim to the evil reputation. Nor can this be easily disputed in face of the fact that the virus of a snake's poison gland is terribly potent even after the lapse of years, a promising naturalist having been killed in the Jardin des Plantes by an accidental prick from the fang of an old specimen of venomous snake. Bert killed spores by means of compressed oxygen, but failed to destroy the virus of a scorpion, or of vaccine matter, or with pus from glanders. Chauveau gives a critical case when he reports that the lambs of ewes which died of Splenic are proof against that disease ; the placenta filtered out the solid particles, and only the fluid part of the blood was inoculated in the lamb.

This brings me to the non-morphological poisons which are, to use D'Arcy Power's description, soluble in water, capable of passing through porous earthenware under pressure : difficult to pass through animal membranes ; are killed by 71° C. (159° F.) in solution, or 100° C. (212° F.) in air.

The first disease I would speak of under the head of non-morphological poisons is Hydrophobia, and I do so, not because it is a subject on which there is much certainty—rather the reverse, but because it is of very great importance in Glasgow. The relations of the dogs in this city, and the enormous excess of males, and the increase of Hydrophobia, point to this as a subject well worthy the most careful investigation by the experimental method. In a recent conversation with Dr. Carpenter, he mentioned several cases supporting the view that some of the so-called Hydrophobic cases were hysterical, that in fact the diagnosis of cases where the nervous system is so largely involved is frequently open to doubt. Now the virus of Rabies is supposed to be communicable by the saliva ; and Pasteur holds that the microphytes conveyed therewith set up the disease. But the recent experiments of two individuals with non-rabid saliva, show that that secretion desiccated is poisonous. Vandyke Carter killed monkeys with the saliva of patients labouring under Spirillum Fever, or Relapsing Fever. Now the poison of the venomous serpent is a fluid secreted by glands, is a normal product of normal tissue-change ; it is derived from glands homologous with the salivary glands. If we find that human saliva by the ferment (as we may call it in the meantime), ptyalin, affects organic compounds, it would be difficult to deny that it may contain other ferments, in small quantities in man, in very high concentration in serpents. The case of Hydrophobia, then, is still an open one. Galtier, of Lyons, a city whose veterinary school is doing more for pathology than any other institution, is at present experimenting on this subject. He has found that the virulent fluid may confer protection against inoculation into the tissues, if it is introduced directly into the stream of a blood-vessel. The experiments are most interesting, and will, if satisfactory, throw much light on the particulate or ferment character of the poison.

Naegeli thinks the contents of microphytes may be the ferment which sets up active changes, and that the disease is thus not the result of changes ini-

tiated by the feeding of the microphyte. Lister has adopted the same view. Onimus dialysed the blood of Typhoid Fever, and inoculated with the fluid full of organisms on the outside of the dialyser, but found it innocent ; whereas the residue within was virulent. If the organisms had been specific, both experiments should have succeeded equally ; but the ferment or the particulate poison, not microphytal, was kept back. To meet this case we should be called on to add another test to our germs ; bodies apparently identical are not identical if, when present on both sides of a dialyser, they are poisonous on the one, innocent on the other.

Septicæmia, claimed as a germ disease, has been produced, not by the crude septic fluids, but by the inoculation of sepsin, a substance obtained by Bergmann, in 1868, from putrid matter ; a similar result having been, as already said, obtained by Panum: the two observations placing this substance, as a cause of disease, among the non-morphological poisons, or ferments proper.

Gentlemen, I am not opposed to the Germ Theory. I do not cavil at it. But I am opposed to the unhesitating acceptance of any theory which involves so much hypothesis, and a sudden and entire uprooting of our former notions as to even normal processes. There is need for further observation, but above all for the more vigorous application of chemistry to the investigation of results.

I accept the results hitherto obtained as most valuable ; for practical purposes many of them are unspeakable boons to mankind and to our domestic cattle. But successful treatment does not constitute the basis of sound pathology. If I have to-day succeeded in drawing your attention to the grand principle which should ever guide your practice, namely, that success in the treatment should make you doubtful as to whether you have grasped the real pathological condition with which you have to deal, I shall be well content. As the constant association of two phenomena is not necessarily causal, so the constant curative effect of a particular drug is not demonstrative that any theory you may have formed on the condition of the patient is correct.

In conclusion, the lecturer urged again the necessity for the combination of the schools of human and veterinary medicine as essential to the progress of pathological science, and most important for the study of therapeutics.

THE NEW VETERINARY COLLEGE, EDINBURGH.

THE winter session commenced on Wednesday, the 26th October, Principal Williams in the chair.

There were present Messrs. Bain, Liverpool ; Borthwick, Kirkliston ; Aitken, Dalkeith ; Aitken, Edinburgh ; Spreull, Dundee ; Bowman, Beverley ; Middlehurst, Liverpool ; Roberts, Kendal ; Brock, Glasgow ; Connochie, Selkirk ; Rutherford, Edinburgh ; McGregor, S.S.C., Edinburgh ; Wardlaw C. A. Edinburgh ; Falconer King, City Analyst ; Dalling, Bathgate, Brownee, Coalbridge ; Malone, Wexford ; Hume, Haddington ; Professors McAlpine and Lewis, and a large number of students.

Letters and telegrams of apology were received from the following gentlemen :—Professors Robertson and Pritchard ; Messrs. Harpley, George Fleming, J. Roalfe Cox ; R. Reynolds, Liverpool ; Lawson, Manchester ; P. and A. Taylor ; T. Taylor, Manchester ; A. Phillips, Piershill Barracks ; P. Walker, Bradford ; C. Challinor, Pendlebury ; Schofield, Pontefract ; H. Snarry, York ; Wm. Broughton, Leeds ; J. Nettleton, Northallerton ; J. Hepburn, Coldstream ; C. Stephenson, Newcastle ; H. Barnes, Malpas ; H. and R. Cartwright, Wolverhampton.

Dr. HUNTER, Professor of Physiology in the New Veterinary College, Edinburgh, gave the opening address at the commencement of the present winter session. He began his address by welcoming the students to their winter work, by showing the nature of that work, and impressing upon them the necessity for constant progress. Even after their studies were supposed to have come to a close, and they had entered on the practice of their profession, the necessity for study was not removed, unless they wished to remain contented in the very humblest ranks. In the course of his remarks, as illustrating the very great advances in veterinary medicine as well as in those departments supposed to belong more particularly to the sister profession, he gave a short history of the germ theory — how many specific diseases had been proved beyond doubt to owe their origin and continuance to certain organisms found in the blood and fluids of the affected animals; and how it was quite possible that we should be able to trace the origin of many more, if not all of the now known specific diseases, to similar causes.

The work of Pasteur in connection with ferments, and his later investigations on Silk-worm Disease in France, in particular his valuable contributions in regard to our knowledge of Splenic Fever, were cited as instances of our rapid advance both towards a scientific diagnosis of certain hitherto fatal diseases, and to what was more important, a means of prevention, by inoculation with a weakened virus. The importance of this as a real preventive measure was discussed, and the amount of valuable knowledge on this subject resulting from the labours of Chauveau of Lyons, of Koch of Germany, of Toussaint of Toulouse, and several others, was instanced as showing how great a part had been taken in these investigations by veterinary surgeons. After speaking shortly of Wool-sorters' Disease, of the ease with which contagion might be contracted, and of its marked fatality, he impressed upon all students in whatever department of medical science they might be engaged, the necessity of becoming thoroughly acquainted with the microscope as a means of diagnosis.

The merits of cremation were discussed, and reference made to its seemingly extended employment, in regard to the human subject at least, in Germany. It seemed that mere burial was no protection against the continued life and further spread of the germs of many fatal diseases, and that the only sure means of destruction was burning. During the course of the address several references were also made to the serious impediments in the way of British progress in these departments, owing to the obstructions caused by the Vivisection Act. The address was brought to a close by again giving several wholesome pieces of advice to the students, in regard to their methods of study, and they were reminded that "art is long, and life is short."

Professor WILLIAMS proposed a vote of thanks to Dr. Hunter for his excellent address, and expressed his gratitude to the many friends who, by their presence and correspondence, had again shown the warm interest they felt in the continued success of the College.

He then referred to various matters affecting the profession, not the least of which was the Veterinary Surgeons' Bill, the purpose and effect of which he explained. He said the Bill had met with opposition both within and without the profession, and, he believed that the opposition was made in all sincerity; but the Bill was now law, and he trusted that the bitter feeling which had been aroused would now be forgotten, and that all would unite in still further advancing a profession now protected by the law of the land.

He then referred to the pupilage clause, which he said had been found to be beyond the powers of the Council to impose. He had no sympathy with that clause, and felt sure that the majority of those present would agree

with him that it would have been impossible to carry it out except in large cities. In Scotland it would have been an impossibility, and, by preventing respectable young men who could not afford time and means for this pupilage from entering the profession, would have been the means of increasing the number of non-qualified men, notwithstanding the Veterinary Surgeons' Bill.

With reference to the experiments of Pasteur and others, alluded to by Dr. Hunter, he was of opinion that the authorities of this country had not taken the advantages derivable from inoculation, which undoubtedly had been the means in Edinburgh of arresting, indeed of exterminating, Pleuro-pneumonia in cattle. He thought that even greater results than at present obtained would be got by the attenuation of the virus (suggested by these experiments) even in that disease. By greater results he meant that the few unfavourable cases which now occurred would be avoided.

During the summer, while he had been engaged in an important investigation for the Highland and Agricultural Society, regarding certain diseases of sheep, he was much impressed by what he had seen, and he could not help expressing a hope that some young, active, and scientific man would soon be specially sent by the Government to study the many almost unknown diseases of sheep, etc., and that a chair of comparative pathology would be instituted, from which the knowledge so obtained could be given to the world, to the mutual advantage of the profession and the public.

The Rev. J. OVEREND, M.A., seconded the vote of thanks to Dr. Hunter, and expressed his great satisfaction at seeing the benches so well filled with students, to whom he gave a few words of caution and advice.

The proceedings terminated by a vote of thanks to the chairman, proposed by M. MCGREGOR, S.S.C.

MONTREAL VETERINARY COLLEGE.

THE session of this Veterinary College was opened, on October 4th, by an address from the Principal, Dr. McEachran, when there was a good number of students present and also some members of the medical profession.

After welcoming the students, Dr. MCEACHRAN proceeded to point out the new departure which had taken place in connection with the veterinary profession during the last few years. In consequence of the spread of contagious diseases amongst cattle, whereby the food supplies of the people were seriously affected, various governments had been led to pay greater attention to veterinary science, which had been one of the last, if not quite the last, to emerge from the darkness and superstition of what are called the dark ages; the village farrier having been looked upon, until comparatively recent times, as possessing all the knowledge necessary for the cure of diseases amongst the brute creation; though in ancient times, as far back as Homer, considerable importance was attached to the curative treatment of the lower animals. But at the beginning of the present century, veterinary colleges were established in various countries in Europe, and many left the medical profession for the veterinary. Since that time the science had made great progress; and extensive and valuable additions had been made to its literature. The veterinary profession required equal intelligence, education, and scientific knowledge with the sister profession; and it was a mistake to regard it as a degree or two below the so-called liberal professions, as it was regarded when ignorance, cruelty, and superstition held sway. In some respects it was more difficult than the medical profession, which had but one animal to deal with, capable of speech; whilst the veterinary profession had

to deal with the whole family of domestic animals ; some of which might have intelligence, but lacked the power of expressing it. The importance of the profession had never been felt more than during the last two or three years. He then referred to the enormous losses sustained in England and the United States through the neglect of the science and the destructive consequences of Pleuro-pneumonia, the Foot-and-Mouth Disease, and Rinderpest. Referring to the spread of these diseases in the United States, he said if they once crossed the Alleghany Mountains, the matter would be beyond the government's control. The American Government had done nothing towards the support of the veterinary colleges, or the recognition of the graduates, except recently in the changed order of things in connection with the army. Up to a few months ago any groom or farrier was eligible for the position of veterinary surgeon in the army. Now only qualified members of the veterinary profession were admitted, and they were raised to the rank of officers ; whereas before they had only the rank of sergeant. There had also been a veterinary department added to the department of agriculture ; and it was the intention of the department at Washington to appoint port inspectors as in Canada. Amongst the individual States Illinois had taken the initiative in organizing a veterinary department, and other States were following. He represented Canada as treating the profession better than either the United States or Great Britain, though he did not say that even here the Government gave all the assistance it should. In Germany, France, Russia, Norway and Sweden large sums were voted annually for the support of the veterinary colleges. They were, in fact, Government institutions. He proceeded to give a detailed statement in reference to the colleges in European countries, and concluded with some practical advice to the students, in which he spoke of the importance of their studying pathological anatomy, chemistry and histology, also of the importance of the microscope. For the practical application of the knowledge thus obtained they would have to study materia medica and therapeutics. He advised them to attend all the lectures, take notes of them, and to read up the subjects treated of in the lectures from the text books. He also urged upon them the duty of kindness towards the lower animals, and that they should never inflict unnecessary pain upon them.

Dr. OSLER, at the close, addressed a few words to the students. He said that during the past five years a change had come over tho public mind in reference to the veterinary profession ; but he said its importance was realized much more fully on the European continent than in England or the United States. As to the status of a veterinary surgeon, it depended entirely upon himself, and in regard to this he could not do better than recommend them to follow the example of Dr. McEachran, as to the way in which he carried on his daily work, and conducted himself in every relation in life.

Army Veterinary Department.

Gazette, October 28th.

VETERINARY DEPARTMENT.—Veterinary Surgeon, First Class, C. G. H. Reilly, from half-pay to be Veterinary Surgeon, First Class ; Veterinary Surgeon W. Pallin resigns his commission.

Obituary.

JOHN GERRARD, M.R.C.V.S., of Romford, Essex, died on October 1st, at the early age of 43 years, after a somewhat lingering illness, the cause of death being Melanosis. Mr. Gerrard graduated in 1869, and practised for some time in Market Deeping, Lincolnshire, whence he removed to Romford, where he was obtaining a large measure of confidence and support. The name of our deceased colleague will be familiar to the readers of the VETERINARY JOURNAL, as a frequent and always welcome and instructive contributor. Honest and sincere in all his dealings with his professional brethren, an earnest worker in the field of veterinary medicine, and one who would most probably have rendered it good and large service had he been spared, John Gerrard will be greatly missed from the literature and scientific meetings of the profession; while his untimely removal from among them will be deplored by all his friends, and they were numerous in the east, north, and south. Terse and pungent in his criticisms, his motives were always open, pure, and unbiassed.

The scientific spirit was so strong an element in his character, that when the grasp of death had all but crushed out the vital spark, he requested that an examination should be made of his corpse, in order that the nature of the then obscure and insidious malady should be ascertained for the benefit of science. His request was carried into effect. Most extensive melanotic deposits were found in the liver and spleen, which were enormously enlarged.

Retired Army Inspecting Veterinary Surgeon W. DEATH, F.R.V.C.S., died at the residence of his father, Abberton Hall, Colchester, on October 26th, aged 49 years. Mr. Death graduated in 1854, entered the army on January 27th, 1855, was promoted to the rank of First Class Veterinary Surgeon in 1863, and Staff Veterinary Surgeon in 1875. He served in the Crimea from June 2nd, 1855, to the termination of the war with Russia, for which he received the medal and clasp and Turkish medal. He also served in the Indian campaign of 1857-8, including the siege and capture of Lucknow, for which he was awarded the medal and clasp, with a year's service allowed for Lucknow. Mr. Death retired from the army a few years ago, through infirm health, and never recovered, but succumbed at last to Paralysis.

The death is reported of J. WATTAM, M.R.C.V.S., Stamford, who graduated in 1857.

Correspondence, etc.

THE VETERINARY SURGEONS ACT.

SIR,—It occurs to me that we should exhibit our sense of the value in which we hold the "Veterinary Surgeons Act" in a more tangible form than in mere expression of thanks to him who conceived and carried it to a successful issue.

I venture to propose that Mr. Fleming be presented with something which, while being sufficiently handsome, will, at the same time, be a fitting and enduring testimony of the value we individually and as a body set upon this last great service he has done the profession.

Let the opportunity to subscribe be given by circular to every member of the profession, both at home and abroad, and I very much mistake them if the collective response thereto be less pleasing than it will be surprising.

Will some gentlemen conveniently situated take the matter up?

Yours, etc.

10, Bread Street, Edinburgh, *Nov.* 4. R. RUTHERFORD.

CANINE PATHOLOGY.

SIR,—As I have elsewhere observed, "of all the domesticated animals subservient to man, the dog may, without fear of contradiction, be said to stand pre-eminent. His courage, fidelity, usefulness, and companionship attach him to the human race in bonds of lasting endurance." Pathologically, then, he is a fit and proper subject for study. His diseases are numerous, and oftentimes complicated; and year after year numbers of valuable dogs are lost either through neglect, empiricism, or ignorance. In my own profession, I know of no branch of study more interesting than that of canine pathology.

Feeding, nursing, general management, and surgical and medical treatment are all matters of vital importance. And I am quite sure the man who lays himself out for, and thoroughly understands, this subject, is duly appreciated and repaid; if not pecuniarily, at least by the peculiar gratitude of the animal, and the knowledge that he has been the means of alleviating suffering.

At the present time it is to be feared that unqualified "dog-doctors" are reaping the benefits that should legitimately accrue to the veterinary surgeon. And to whom is the blame due? Not the public, and certainly not the press, but the veterinary surgeon. If the health and life of a dog are of secondary value in the eyes of a professional man—a man whose duty it is to minister to his ailments—it should be no matter of surprise that the owner of such an animal will seek advice from those who profess a knowledge of the subject, whether they be charlatans or otherwise. But probably the root of the evil lies in not making canine pathology an enforced study at the veterinary schools. During my own collegiate course I only heard two lectures on canine diseases—one on Distemper, the other on Rabies. What about the hundred-and-one other maladies, to say nothing of accidents and operations? All these I have been compelled and pleased to study for myself; and, owing to a natural love of the subject and animal from early years, I have endeavoured, as far as possible, to make myself thoroughly conversant with the matter. In the great strides of progress our profession has made on all other points, it must be confessed that it has remained comparatively stationary as regards the dog. More than once I have argued the necessity for tuition in canine medicine, and I had hoped ere the year 1881 had closed that a chair of canine pathology would have been established at the Royal Veterinary College and its kindred schools. Fancy, it is but a short time since an empiric "dog-doctor" in London paid his visits in a neatly-appointed brougham! He is now *non est*, but his widow still dispenses, or did very recently, his prescriptions. Shall this be mentioned as a joke, or to the shame of our profession? The numbers of letters I receive from veterinary surgeons regarding canine ailments is a strong confirmation of my views, and I feel certain were such a step as that I have suggested taken, it would meet with general approval. Surely if the dog is thought good enough for vivisectionists to found their alleged discoveries on, he is good enough to make a study of in disease. I have been prompted to write these few remarks in the interests of my profession and the welfare of the animal they concern, and in that spirit I hope they will be received.

Yours, etc.,

J. WOODROFFE HILL, F.R.C.V.S.

"OUR FUTURE FEES."

DEAR SIR,—Now that you have gathered the legally qualified together into one "fold," separately and independently of the unqualified, I think action should be taken without delay, to arrange and institute a professional

tariff. It is not for the metropolitan practitioners I agitate, but those of our members who reside in the provinces.

Professor Robertson, at the Fellows' dinner, remarked that in Scotland the clients paid readily for advice, but they disliked being *physicked*. Now in England in many counties the qualified man gives out to the public the fact that "No fees are charged for journeys or visits," the custom being to make the fees out of "physic and drugs;" to me a most unhealthy custom, and one that should be discontinued at once and for ever.

I do not say this practice does not exist in the metropolis, for I have reason to know that it does to a limited extent; and I trust it will be abandoned by the few who practise it.

It is a system to which I would never submit, and during a professional career of a quarter of a century and upwards, I have had no difficulty in obtaining payment for visits and advice, independently of medicines.

Unless we have uniformity in our tariff, we shall never take hold of public esteem. We must appraise our services, and then the public will be led to *value us*. Much now-a-days depends on the price. Of course, every man may not hold gifts, or be equal to another; this will always be so; I am not speaking individually but collectively, and am seeking to set a fair and just tariff, so that in cases of dispute between surgeon and client, a Guide can direct them without appeal to the law.

I am unable to apprehend the position of the general county emasculators, respecting the new Act; for I know many practitioners decline operating, and if these castrators are to be registered, it will be unfair to the members; and if they are not registered, can they practise as heretofore? I think that all members should take these operations, even on principle, if quackery is to be thoroughly stamped out. The fee for colts has not been tempting in some counties, but I have always obtained a guinea each, or when I have had several in one yard I have thrown one in "for love," nothing more. Bulls 5s. if young, 10s. if old.

The examination fee should always be one guinea, and if a journey has to be made, travelling expenses extra. I always charge this, and am paid with pleasure.

I do not desire to enter into the question of charges for medicines. I prefer hearing the result of the discussion which I hope will be now opened, and in the end lead to a uniform system of fees and charges amongst the members of the R.C.V.S.

When such is arranged, and the rules of professional etiquette observed by the members, then will commence the epocha of the veterinary profession and its practitioners.

Faithfully yours,

London, W., *November 8th*, 1881. ROBERT WARD, F.R.C.V.S.

[This subject is certainly worthy the attention of members of the profession. It is one that should be discussed with a view to the reform indicated by Mr. Ward.]

BURSATTI.

SIR,—My belief is confirmed that nothing is to be gained by continuing a discussion on this subject with F. Smith. But in order that I may vindicate my former propositions on the subject, I will here beg to be allowed to make a few observations and notice the following objections raised by your correspondent:—

1. Mr. Smith's chief cause of complaint seems to lie in one point, namely, in the fact that I quote from *human* surgeons on Cancer. To prove the analogy between "Bursatti" and Cancer, it is only fair to quote the experience of human surgeons on Cancer, side by side with that of mine on

"Bursatti"; and I do not see what reason Mr. Smith has for complaint when I do this. Cancer in man and Cancer in the lower animals are, with perhaps slight differences in severity of manifestation, one and the same disease. Observe what M. Leblanc in the *Recueil de Médicine Vétérinaire* says —"Cancer in the lower animals is characterised by the cancer-cells which are observed when it attacks mankind."

2. Mr. Smith asserts that "*the best authorities* say that secondary deposits in internal organs as a result of Epithelial Cancer is the exception." This only goes to confirm what I have already said, namely, that Mr. Smith must first be well versed in the history of Cancer before he can be expected to effectually cope with the subject of Bursatti. I could here introduce quotations from several authors in justification and confirmation of my views, but I will merely give one. Instance what Dr. T. W. Cooke, "On the Allies and Counterfeits of Cancer," says—"It has lately, especially by Mr. Collins, of Dublin, been asserted that Epithelioma is not Cancer, and that it ought to be separated from the list of malignant diseases. I regret to be obliged to differ from a surgeon who has devoted so much attention and skill to this subject, *but it is impossible to resist the conclusions which result from experience;* and I think I am supported by others in the opinion, that although Epithelioma is, by operation, put away for a much longer period than any other form of Cancer, yet, *with very rare exceptions, it will crop out again*, and—either by infiltration of the neighbouring parts, or *by transference to some vital organ*—it will show that it is, after all, a constitutional dyscrasia, which cannot be got rid of by mere local eradication. Some great successes may happen now and then, and I will venture presently to record a few, and to show by illustration the happy results obtained. I have, however, noted that, after operation, although there was no apparent return of the disease, the patient in many cases died within a year or two of some undefined internal disease—which of course an optimist would say had no connection with the disease in the lip, but which, in the absence of a *post-mortem* examination, would, to the practised surgeon, be an indication of something more than a suspicion of a metastasis morbi."

Dr. Hamilton, Professor of Morbid Pathology in the University of Edinburgh, also teaches in his class that secondary and tertiary growths in internal organs are commonly met with as the result of "Epithelioma" in man. More than this, I have in my own possession specimens of secondary and tertiary growths in the lungs and liver of man, the subject of Epithelial Cancer. What stronger evidence would Mr. Smith require? But it is needless for me again to point out to Mr. Smith that "Epithelioma," even in man, though malignant, is the least so of all the cancers.

3. Mr. Smith allows having stated that "Visceral lesions have not been observed by me." It is premature of him, then, if his knowledge of the disease is so limited, to attempt to assume the position of an examiner on the subject of occurrence of "kunkurs" in internal organs.

4. Mr. Smith is quite in error when he states that I have "carefully avoided the Fly theory throughout." He is misleading when he further states that there is a "deep silence" on my side on the question of the microscopic appearances of the Bursatti sores. For a complete description of the microscopic appearances presented by the sores, I refer him to my articles on Bursatti contained in the VETERINARY JOURNALS for July and August last.

5. Dr. Jayne, of Edinburgh, after carefully examining the specimens of Bursatti sores sectioned and mounted by me, said "there was nothing *parasitic* about the disease."

Dr. George Thin, one of our best and most distinguished microscopists in England, in conjunction with our able Editor, Mr. George Fleming, after a prolonged and laborious examination of kunkurs received from Mr. Mey-

rick, of India, reported* in much the same terms, namely, that "nothing *parasitic* could be detected about these kunkurs," that they were in fact nothing more than "*cell concretions*"†— an opinion with which I, in common with others who have devoted years of study to this disease, wholly concur.

In conclusion, I must again repeat, for the information of Mr. Smith, that *many reasons surround the history, wholly irrespective of the microscopic view which may be taken of the nature of the disease* (*Bursatti*), *as being cancerous*:—1. *The peculiar onset and insidious course of Bursatti*; 2. *its malignant*‡ *tendency*; 3. *the property it possesses of secondarily involving internal organs*; 4. *the peculiar pathological lesions it slowly induces*; 5. *its liability to recur in loco when once it has been apparently eradicated*; 6. *the total absence of pyrexia attending its course*; 7. *the absence of true suppurative changes in the lesions produced by it*; 8. *the inoperative influence of the disease-products upon secondary "hosts"*; 9. *the characteristic cachexia of the later stages*; 10. *the onslaught waxing equally severe on animals inordinately strong, as on the thin and weakly, are all corrobarative evidences of the fact enunciated, that the disease is Cancer, evidences to which the most reluctant alienist must one day give adequate countenance.*

I have mentioned the rarity of death occurring from Bursatti *per se*. Mr. Smith seizes on this statement to endeavour to throw discredit on my observation of *post-mortem* appearances, although I know that he must be aware that horses rendered useless from Bursatti are, in the Government studs, killed, not allowed to die. Opportunities for *post-mortem* examination are frequent, and I have availed myself of them. Mr. Smith also quotes portions of sentences which apparently are opposed to the sense of the remaining writing. If he will quote each of these sentences *entire* they will defend themselves.

In the next month's Journal I hope to clear up definitely the subject of Bursatti considered in its various heads, and to point out the deficiences in past investigations.§ I remain, sir,

Your most obedient servant,

RICHARD W. BURKE, M.R.C.V.S., A.V.D.,

Aldershot, 18*th October*, 1881. Attached to Royal Engineers, Aldershot.

DEAR SIR,—As there seems a tendency to personalities in the discussion of this scientific subject, I would beg to suggest that specimens of Bursattee sores be submitted to some eminent microscopist for an opinion as to their nature. I feel sure that if an application is made for specimens there are many Indian veterinary surgeons who would comply. The only precautions to be adopted would be to inform them how to preserve the specimens, and request a certificate from the donor, stating his name, date of removal of the sore, and from what part of the body, its condition (chronic or otherwise), and the state of the system (whether simply local disease or general systemic infection). Believe me, yours faithfully,

India, *7th August*, 1881. F. SMITH, V.S., 12th Royal Lancers.

* Vide VETERINARY JOURNAL.

† Many such concretions are shown in Dr. Green's "Morbid Pathology," p. 193.

‡ Malignancy, note, does not necessarily mean the implication of neighbouring lymphatic glands. Often the lymphatics are free where the system is charged with the disease; and in this I am supported by statistics drawn by human surgeons on Cancer.

§ In the VETERINARY JOURNAL for October, 1881, we notice the following statement:—"In old Bursatti sores *in the kunkur producing stage*, these hard masses must be periodically removed and destroyed."

PATHOLOGY OF NAVICULAR DISEASE.

MR. EDITOR,—Mr. J. B. Martin having reopened the controversy on the navicular disease with a long letter, although he states that he has neither time nor inclination to do so ; under those circumstances, I ask the favour of your allowing me to make a short reply. Mr. Martin states that in my last letter I had insinuated that Messrs. Fleming and Greaves had made a coloured statement, and that I had taunted Mr. Barford. I deny having any such intention, and consider that Mr. Martin has no right to draw such inferences. I still think that Mr. Barford was not justified in making that statement, unless he was prepared with specimens to prove it. It is a very unusual circumstance for a pathologist who has made a large number of dissections which, he believes, shows that a certain theory (largely admitted to be correct) is not so, not to preserve one specimen in proof of his published discovery. I am not surprised at Mr. Martin's not detecting the enlarging and breaking down of the cancelli of the navicular bone of the young horse, when he states that he could only detect the porcellaneous appearance of the other navicular bone by the aid of a strong magnifying glass. He also states that he has sent the bone to the Editor for his examination. It would have been more discreet on his part if he had taken the Editor's opinion not only of the bone, but also of his letter, before publication. I can only repeat that the whole structure of the bone had become porcellaneous, and that it does not require the aid of a glass for its detection. Mr. Martin has entirely lost sight of the only way by which he could prove his theory, as I have before stated, by producing navicular bones, the cartilages of which are ulcerated, and the cancelli of the bones healthy. He also states that he has never seen any proof of the disease commencing in the ceutre of the bone, the reason for which is that he has never thoroughly examined the subject. With reference to his statement that my opinion is only theory, I beg to draw his attention to my notes in the August number ; besides which, I may state that in 1869, when at Edinburgh, as a member of the veterinary deputation to the Scotch colleges, I exhibited to several of the members, including the late Mr. Wilkinson, W. Field, Professor Williams, and others, nearly three hundred specimens, not one of which showed ulceration of cartilage without the cancelli of the bone being diseased, but many of them were more or less affected with caries in the centre of the bone, and the cartilages free from all appearance of disease. Since that time I have shown the specimens to many members of the profession, who are willing to support my theory, if necessary.

THOS. D. BROAD.

Broad Street, Bath, *November 5th.*

DISEASE OF THE BLADDER.

SIR,—Agreeable to your request, I send you the history and treatment of a case of Uro-cystitis. The morbid specimen you have is from a bay mare aged five years.

On the evening of the 22nd of September my attendance was requested in great haste to this mare, which was said to be down and unable to rise, and was sitting on her hinder parts like a dog.

However, when I reached her, a distance of six miles, she was upon her feet, the hind ones being very wide apart—I should say fully four feet—with her back set up, and her ischium nearly touching the floor of the stable. She evinced an extreme desire to urinate, and as she had been a distance of twenty-five miles in the cart, and knowing that she refuses to urinate when the cart harness is on her, I at once withdrew a large bucketful of long-retained urine, and, with some difficulty, administered a cathartic ball. To the loins and abdomen I applied ammonia liniment, and clothed her warmly.

Pulse 95, and temp. 105°. For three or four days she had ordinary doses of aconite three times a day.

On the 27th the pulse and temperature were considerably reduced, and all swinging of her back had ceased ; but there was much difficulty exhibited in flexing her hind fetlocks, and general stiffness in all her legs. Her appetite having returned, I determined to allow the *vis medicatrix naturæ* to do its part. I did not see her again until the 8th of October, when she experienced what the steward at the farm thought was an attack of Colic, and he treated her accordingly. I examined the bladder, and whilst emptying it a most disagreeable odour was emitted, and some matter resembling putrid pus escaped ; something of a gritty nature also came against my finger, and which I had some difficulty in removing, having no other means at hand than my first and second fingers. This excrescence resembled plastic lymph and decomposing mucous membrane, with a sabulous deposit upon it. The portion I sent you is the largest I have taken, and was situated in the vicinity of the trigone of the bladder. The lesion whence it came is not filled up yet. I have taken another since from the neighbourhood of the neck of the bladder also. With regard to treatment, after the 8th of October I gave half-ounce doses of hyposulphite of soda three times a day, with an occasional aperient, and drew off the urine every alternate day, getting away each time much offensive matter and growths like that I sent you, but most of them were smaller. I inject into the bladder every alternate day from 20 to 60 drops of carbolic acid in one pint of linseed oil.

October 15th. Her appetite continues good, but when a concretion is about to enter the neck of the bladder she is in great agony. I am giving, in drinking water, 1 dr. nitro-muriatic acid three times a day.

October 20th. I am injecting, daily, 1 dr. of muriatic acid into the bladder, and no sabulous material is observed ; but if I discontinue this lithotriptic treatment for three days there is a return of those growths. But the offensive odour is, I think, worse. The smell may be compared to a retained placenta, but, if possible, it is more offensive.

I would esteem an expression of your views of this case a favour, as I have not before seen a similar one, neither have I read of one.—Yours, etc.,

Glanton, near Alnwick, *Nov.* 6. WM. MARSHALL.

[There is, in all probability, a fungoid growth—probably of a malignant character—in the bladder. The portion forwarded, and of which a history was requested, was encrusted by lime salts, and appeared like a piece from a colloid cancerous tumour. The interior of the bladder seems to be extensively diseased, and the case is altogether of a serious character. The interior of the bladder should, if possible, be carefully explored, and an examination *per rectum* might assist in arriving at some conclusion—though in the mare this is not so advantageous as in the horse. Perhaps some of our readers will give their opinion of the case. If the mare is destroyed or dies, we should esteem it a favour if the bladder could be sent for inspection.]

NON-QUALIFIED PRACTITIONERS.

SIR,—As a non-diplomate of twenty years' standing, I shall be glad if you, or some M.R.C.V.S., in a responsible position, would explain to me the benefits I shall receive by paying six guineas to the R.C.V. S.to be registered. At present I am not clear upon the point as to whether or not the money had not better remain in my pocket.

I am, sir, yours faithfully,

HARTEST.

["Hartest" is referred to Clause 17 of the Veterinary Surgeons Act.]

CLAIMANTS FOR REGISTRATION.

SIR,—A cab driver named Mellor, living in the neighbouring town of Hove, boldly declares his intention of applying for registration as an "Existing Practitioner," because he has for some time "quacked" about amongst his fellow-flymen, and on the ground of his having "been with a Vet." some years ago. Surely the line will be drawn at cabmen!

Yours obediently,

Brighton. A. METHERELL, M.R.C.V.S.

[The admission of unqualified men to registration is in the hands of the Council, and every care will be taken as to the claims of those who apply.]

THE FITZWYGRAM TESTIMONIAL.

DEAR SIR,—Will you permit me to ask, through the medium of the VETERINARY JOURNAL, what has become of the Fitzwygram Testimonial Portrait or its fund? An announcement in the VETERINARY JOURNAL, for April, 1880, is all I have seen or heard of the matter. Perhaps Mr. Cartwright or Mr. Greaves would kindly give some information on the subject.

Yours very truly,

15*th November*, 1881. H. THOMSON.

TO CORRESPONDENTS.

G. TAYLOR, ROXBY.—The inoculating fluid employed in France to protect calves from Blackleg is not procurable in this country. It requires most careful preparation in the laboratory, and as yet the manner in which it is cultivated has not been made public. When it is we shall describe it in the Journal.

Owing to the extreme pressure on our space, many communications from Messrs. Mills, Burke, Reynolds, Ferris, and others, are unavoidably reserved until next month.

ERRATUM.

In the paper on Bursattee, page 334, line 11 from foot, for "also Cupri Sulph. locally; cover the parts," read "also Cupri Sulph.; locally, cover the parts."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from: J. P. Martin, Rochester; R. W. Burke, A.V.D., Aldershot; W. F. Garside, London; R. R. Cole, Hinckley; J. Smith, A.V.D., India; J. C. James, Thornbury, Gloucestershire; A. F. Appleton, London; R. Rutherford, Edinburgh; J. D. Allman, London; T. D. Broad, Bath; R. Ward, London; R. Patterson, Downham, Norfolk; "Hartest"; W. Marshall, Glanton; Alnwick: F. V. Rainsford, London; E. A. Hollingham, Red Hill; J. H. Steel, A.V.D., Ipswich; J. W. Hill, Wolverhampton; H. R. Bradshaw. Portrush; Dr. J. Young, Glasgow; E. Stanley, Warwick; H. Thompson, A.V.D., 19th Hussars, Dundalk; J. McCall, Glasgow; W. O. Williams, Edinburgh; J. Clark, Cupar Angus; G. Grey, Romford; A. Metherell, Brighton; W. Broughton, Leeds.

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JOURNALS, ETC.: *Wochenschrift für Thierheilkunde und Viehzucht; Recueil de Méd. Vétérinaire; Revue Vétérinaire; Lancet; Live Stock Journal; Medical Press and Circular; Journal de Méd. Vétérinaire; La Presse Vétérinaire; Archives Vétérinaire; Journal of the Royal Society of England; La Clinica Veterinaria; Der Thierarzt; American Live Stock Journal; Edinburgh Medical Journal; Nature; Medical Times and Gazette; Repertorium der Thierheilkunde.*

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